

Form Solutions



22. März 2024

Swiss family business with future



- ▶ With pride we can look back on the traditional history of Jehle AG. Since our **founding in 1947**, we have always dared to try something new and therefore we have grown steadily.
- ▶ Today, our **family-owned company** is successfully positioned on the market in the fields of stamping and forming, injection molding, tool and die making technology.
- ▶ Our customers are seen as our partners. Working together as a constructive team brings decisive advantages to both sides. With the third generation, the course is set for the future.

▶ company video:

<https://www.jehleag.ch/en/company>

Technology Center – Toolmaking with passion



- ▶ As a **technology partner** for customized components made of metal and plastic, we offer complete solutions for a very broad range of customers from a wide variety of industries.
- ▶ **Solutions on point** are the result of the close cooperation between our engineers and the customer.
- ▶ With our 170 employees, we pursue every day for the same goal: **100% customer satisfaction**.
- ▶ In our Technology Center - «**Tool and Mold Making** », newly built in 2019, we work with the latest technologies as well as the optimized material, process and information flow.



Success does not accept stagnation



Company founded by Josef Jehle



Establishment of a second production plant for serial production



Raphael Jehle leads the company into the third generation



Conversion of plant 1 into «2K and hybrid technology center»



Building the first large factory building



Expansion of production by plant 4



Inauguration of Technology Center «Tool and Mold Making» plant 5



75 years anniversary

Ecology – something we are proud of

- ▶ **Sustainable Energy– Our Contribution to the Energy Turnaround**
 - With our 2400m² PV-plant we produce environmentally friendly **solar power**.
 - Our purchased energy consists of **100% hydropower**.
 - By creating our Technology Center, we are also setting new standards in terms of energy.
- ▶ **Disposal and recycling**
 - In all our plants we are careful to avoid and sort the material waste.



Facts & Figures

since **1947**

170+
employees

5
production plants



65 %
export

22
countries

Annual production
over 93 M
components



Innovationen

- ▶ **Technology Center**
Area of 2'400 m²
- ▶ **Laser welding**
- ▶ **Servo technology expansion**
1'600kN + 3'150 kN stamping presses
- ▶ **Vacuum hardening oven**



- ▶ **Injection molding expansion**
Hybrid and 2K-Technology
- ▶ **Automation**
Charging system for heat treatment
- ▶ **Expansion of stamping technology**
21-roll automatic straightening machines

2018/2019



2020

- ▶ **Toolmaking**
Machining Center
- ▶ **Environmental protection**
PV-plant

2021/2022



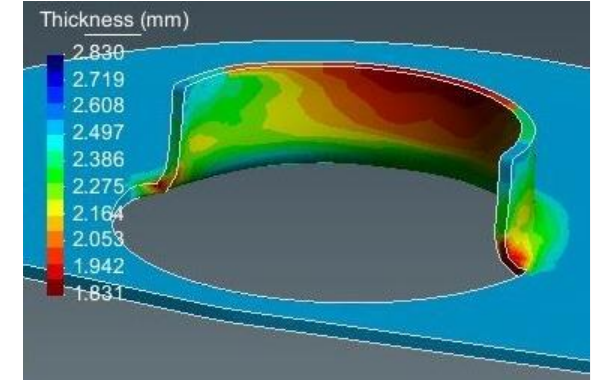
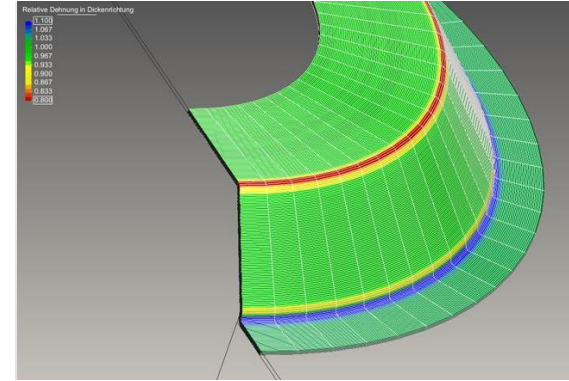
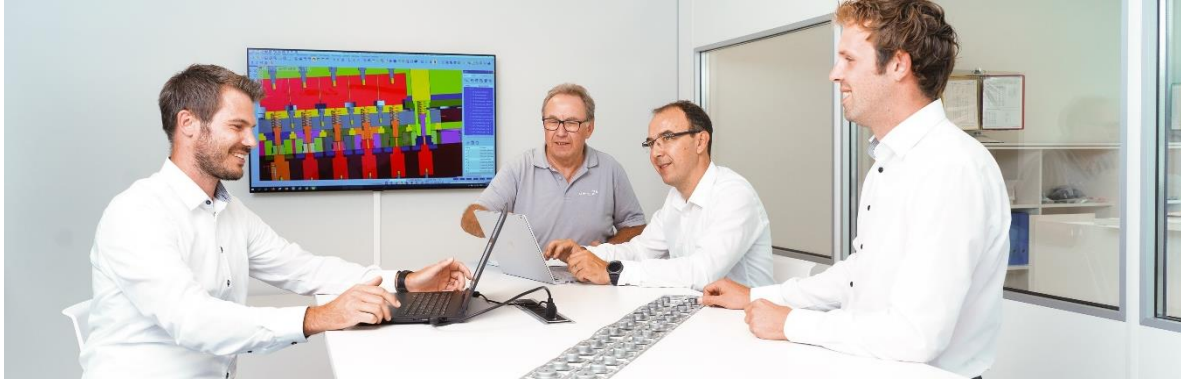
Supply chain

- ▶ Throughout the **whole supply chain**, we have skilled staff who can support you in the specialized disciplines.
- ▶ Moreover, you can take advantage of **total solutions** or only part of these services.



Development and engineering

Tool design processes



- ▶ Development of production- ready and cost-efficient parts
- ▶ Support for process layout and material selection
- ▶ Planning of manufacturing processes and means of production

- ▶ Forming simulations
- ▶ Filling studies
- ▶ Prototyping

FACTS

Added value in development for plastics processing

- in-depth knowledge of material selection
- experience in tool design
- experience in tool making
- proven know-how in the manufacturing processes
- complete technology spectrum from a single source
- 2-component molding experience - tools and production
- hybrid molding experience - tools and production
- creation of different studies for example filling, warpage, weld line and fiber flow

Added value in the development for metal processing

- in-depth knowledge of material selection
- experience in tool design
- experience in tool making
- proven know-how in the manufacturing processes
- complete technology spectrum from a single source
- simulation and calculation for drawn and formed parts

We rely on the latest CAD-Technology

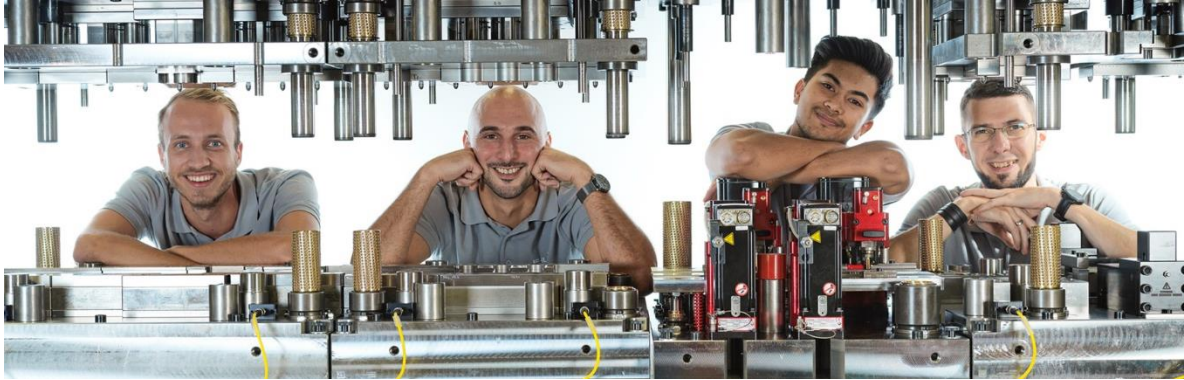
with the possibility of reading the following files:

- VSI system-format wkf in files step, dxf, dwg, pdf
- Interfaces to CREO, SolidWorks and CATIA



Tool and mold making

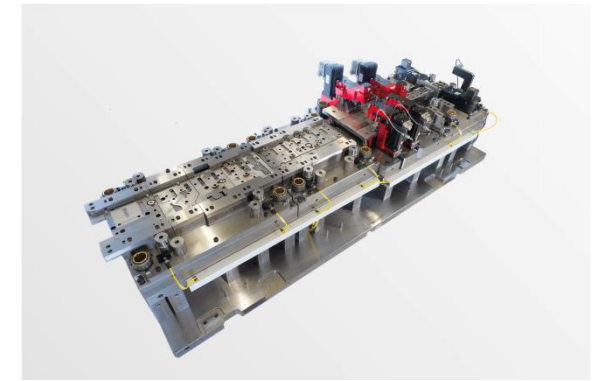
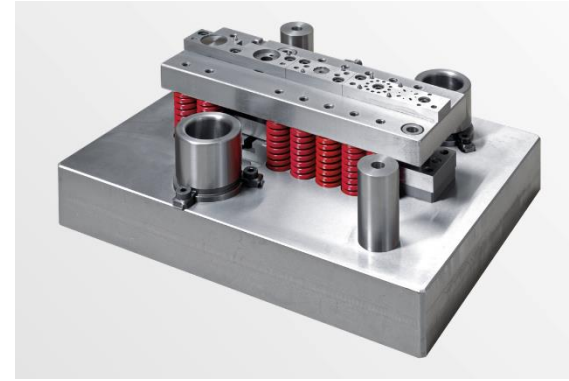
It's a
passion



- ▶ 40 employees
- ▶ Over 75 years of experience
- ▶ 2'400 m² area

- ▶ Building fully air-conditioned
- ▶ 85% of the electricity demand is covered with our own PV system
- ▶ Use of groundwater as an energy source





Complete range of services

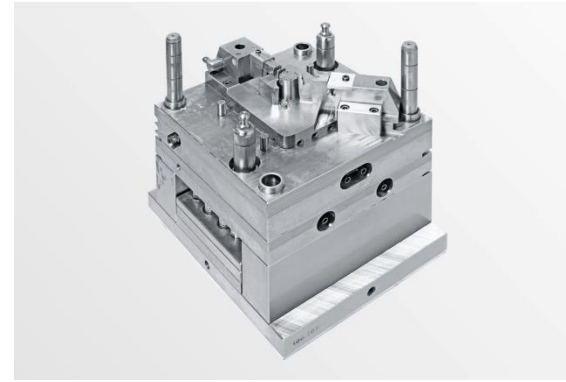
- ▶ From soft machining to heat treatment and the EDM process. **The entire process chain in-house** guarantees short response times.

Applied technologies

- ▶ Stamping tools – complete cut
- ▶ Progressive tools
- ▶ Transfer tools
- ▶ Bending tools
- ▶ Deep drawing tools

Mold making

Precision



Complete range of services

- ▶ The components are geometrically over-worked and thus demolding technology and plastic-compatible optimized.

Applied technologies

- ▶ Injection molding tools
- ▶ Press molding tools

Materials

- ▶ Thermoplastics and Thermosets



FACTS

Tooling concepts

- injection molds for thermoplastic materials
- injection molds for duroplastic materials
- press molds for thermoset materials
- 2-K molds with rotary index and rotary table process
- multi-cavity molds up to 128-cavity

tool sizes:

- 96/96 up to 896/1196 mm

Our specialties

- technical parts with high tolerance requirements
- components with thread deformation
- visible parts
- components with gear teeth
- components with complex mold separations
- overmolding of metal parts
- tools with medical requirements for use in clean rooms

Processed materials

Thermoplastics:

PA
PP
POM
ABS
TPE
PEBAX
PEI
SANTOPRENE
EP

Duroplastics:

SMC
BMC
UF
UP
MF
EP

other materials on request



Stamping, forming and follow-up technologies

Mass
with class



Nothing is impossible

- ▶ Our core competences are stamping and forming technology.

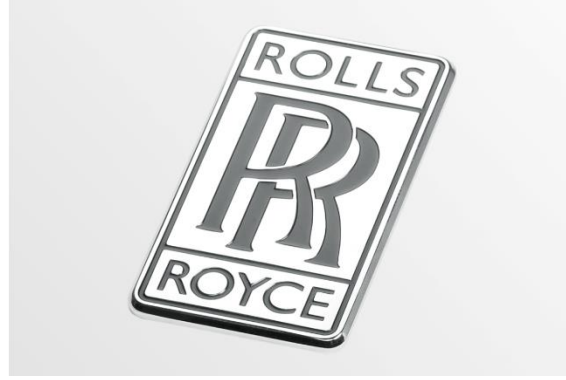
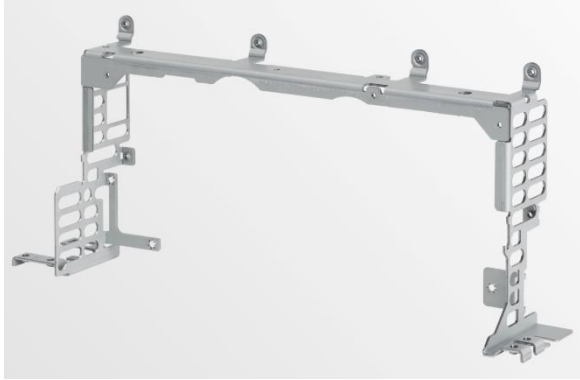
Facts

- ▶ 20'000 m² production area
- ▶ Over 93 million parts and assemblies delivered per year



Stamping and forming technology

efficient and precise



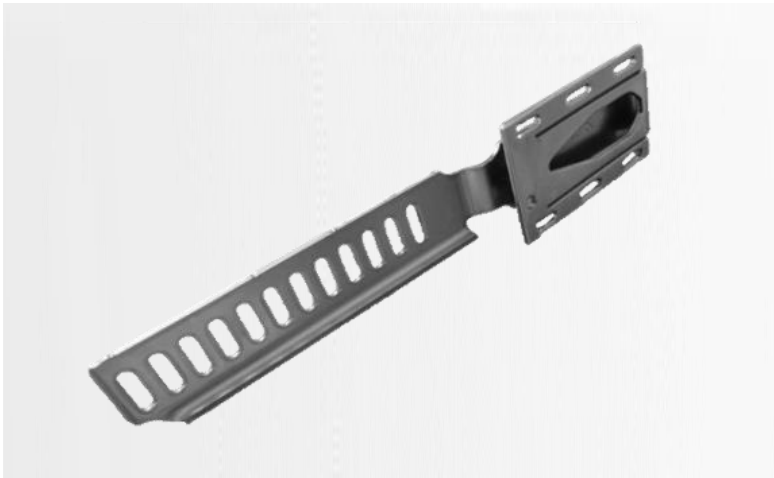
Stamped parts in highest precision

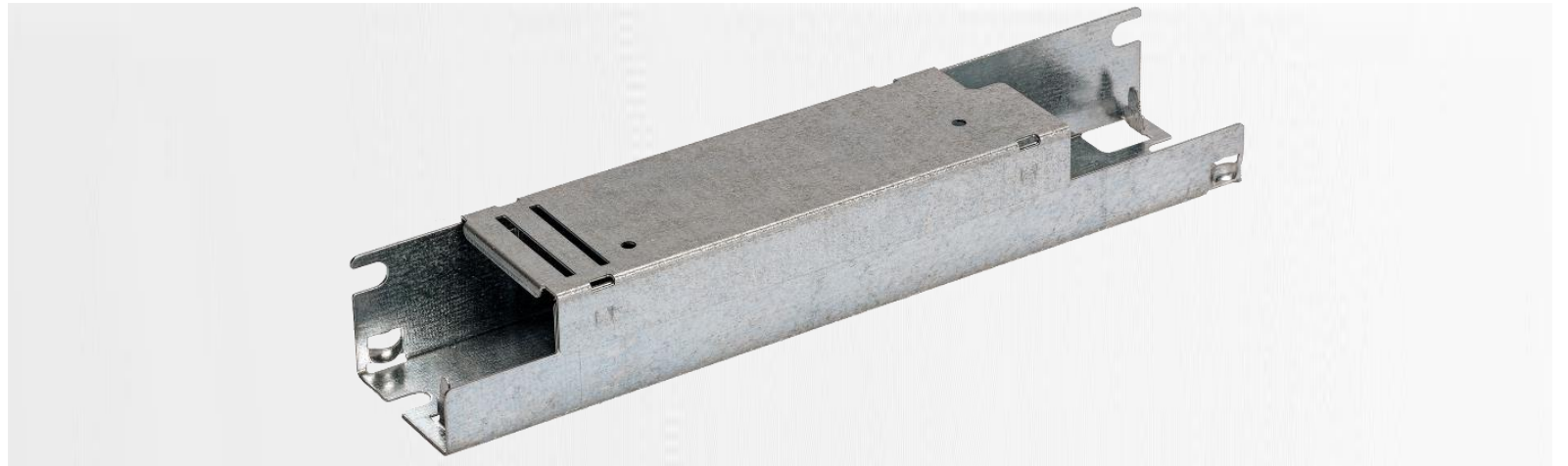
- ▶ From precise complete cut to high-tech progressive tools up to complex transfer tools

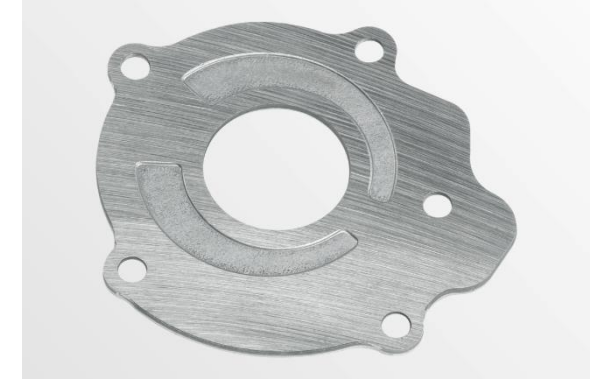
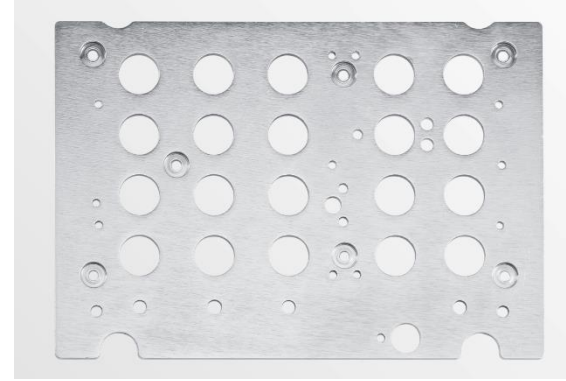
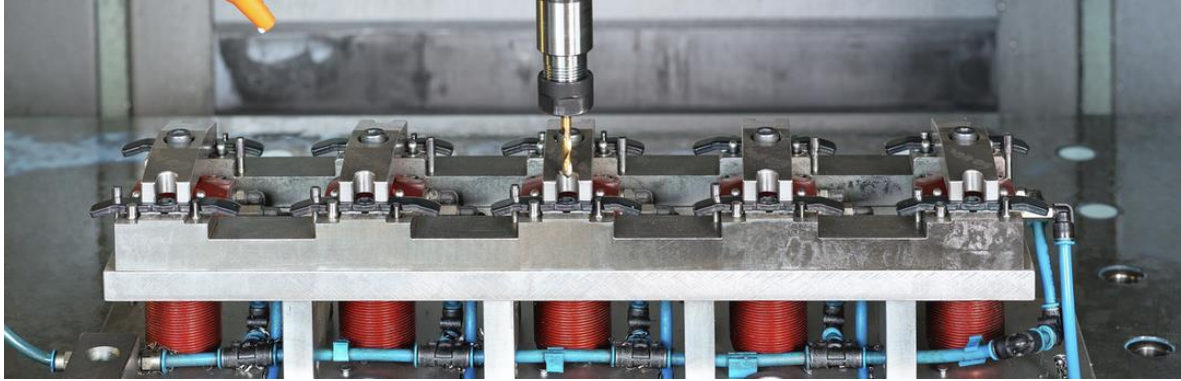
Facts

- ▶ Stamping, bending, forming, embossing and drawing
- ▶ Production from coil, stripes and blanks
- ▶ 50 stamping presses up to stamping force of 6'300kN









Efficient and reliable

- ▶ What cannot be realized in the stamping process for technical or economic reasons, we supplement with our downstream processes

Process Technologies

- ▶ Milling
- ▶ Drilling
- ▶ Threading
- ▶ Double side grinding
- ▶ Straightening, embossing, rounding, folding, cutting to size, notching and sawing

FACTS

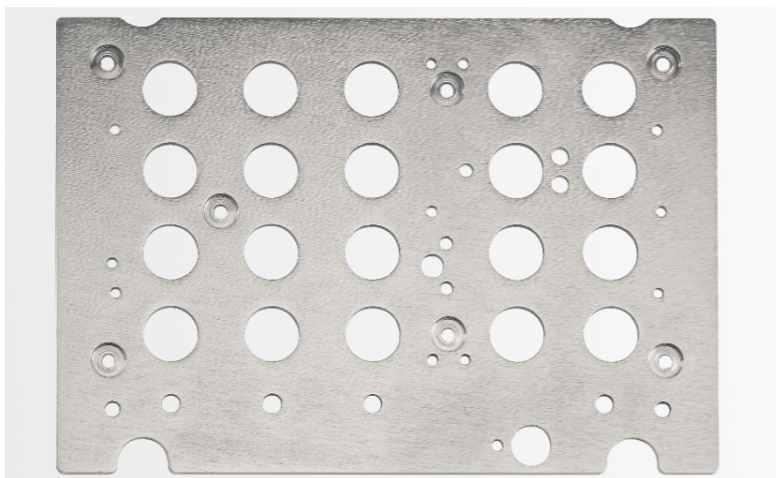
Mechanical processing

- material:
steel, galvanized steel, CrNi steels,
aluminum, non-ferrous metals
- part size:
up to 2'000 mm × 500 mm

Double side grinding

- materials:
steel, CrNi-steel
- Part size:
Ø 10-180 mm
- thickness:
1-100 mm
- achievable thickness tolerance from
+/- 2.5 µm
- achievable flatness of 5 µm
- achievable parallelism of 5 µm







Adding the finishing touch

- ▶ Often it needed for the subsequent use of the components, that they are delivered free of burrs, heat-treated or supplied with a proven technical cleanliness.

Facts

- ▶ Vibratory grinding
- ▶ Brush deburring
- ▶ Cleaning
- ▶ Heat treating

FACTS

Vibratory grinding

- part-size:
up to 300 × 120 × 30 mm
- materials:
steel, galvanized steel, CrNi steels,
aluminum, copper

Brush deburring

- part-size:
up to 270 × 270 × 80 mm –
with automatic parts turning station for
deburring on both sides
- materials:
steel, steel galvanized

Part cleaning

- part-size:
up to 600 × 400 × 300 mm
- part weight:
up to 100 kg
- materials:
steel, galvanized steel, CrNi steels,
aluminum, copper





Customized injection molding processes

- ▶ **Hybrid-technology** – thanks to our broad manufacturing spectrum combined with plastics processing, you benefit from tailor-made product solutions made of metal and plastic.
- ▶ **2-Component-technology** – enables combinations of different plastics and colors.

hybrid technology



2K-technology

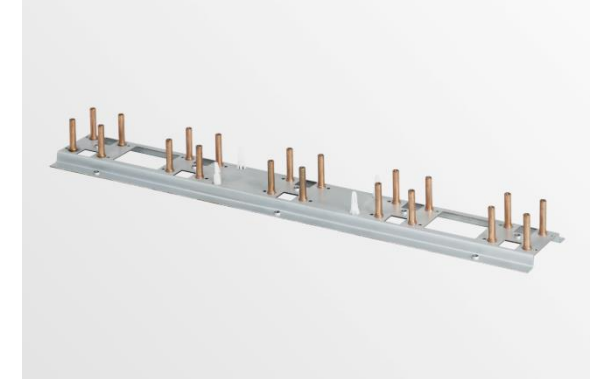


Special components



Welding and joining technology

connect what
belongs together



Challenging components

- ▶ A high level of automated joining processes allows us to manufacture demanding components and complex assemblies.



Welding technology

connect what
belongs together



Automated and tested

- ▶ Thanks to different welding technologies, we offer solutions for all applications.
- ▶ Depending on the quantity and your requirements, we process your parts "manually" or on our welding robots with integrated quality inspection.

Welding technologies

- ▶ Laser welding
- ▶ MIG/MAG
- ▶ TIG
- ▶ Resistance welding
- ▶ Bolt welding



FACTS

Laser welding

- materials:
steel, CrNi-steels
- edge distance to the weld seam already
from 1.5 mm
- power up to 3 kW
- mounting surface:
800 mm × 600 mm × 400 mm

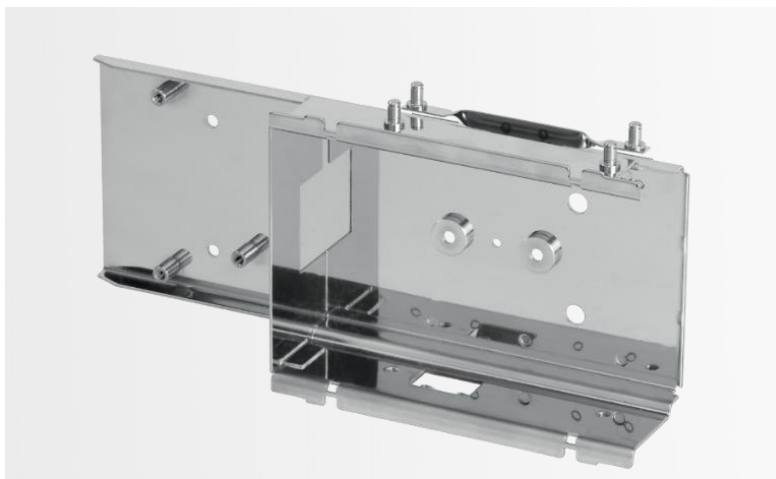
Resistance welding

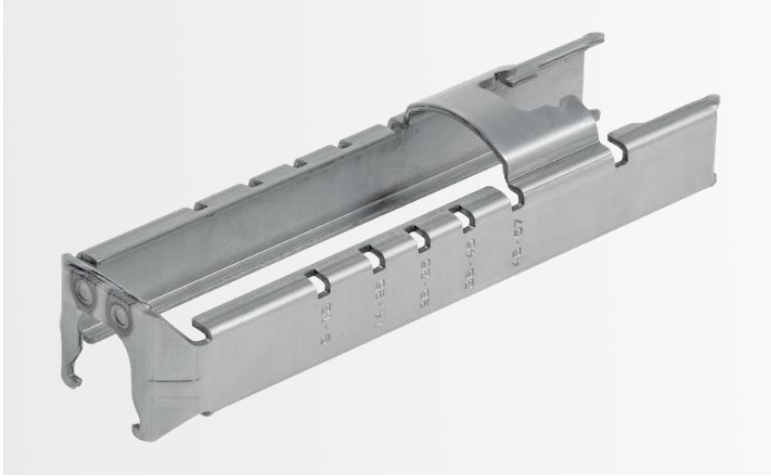
- welding of components with different
sheet thicknesses is possible
- processing of sheet thicknesses up to 8
mm
- materials: steel, galvanized steel, CrNi
steels

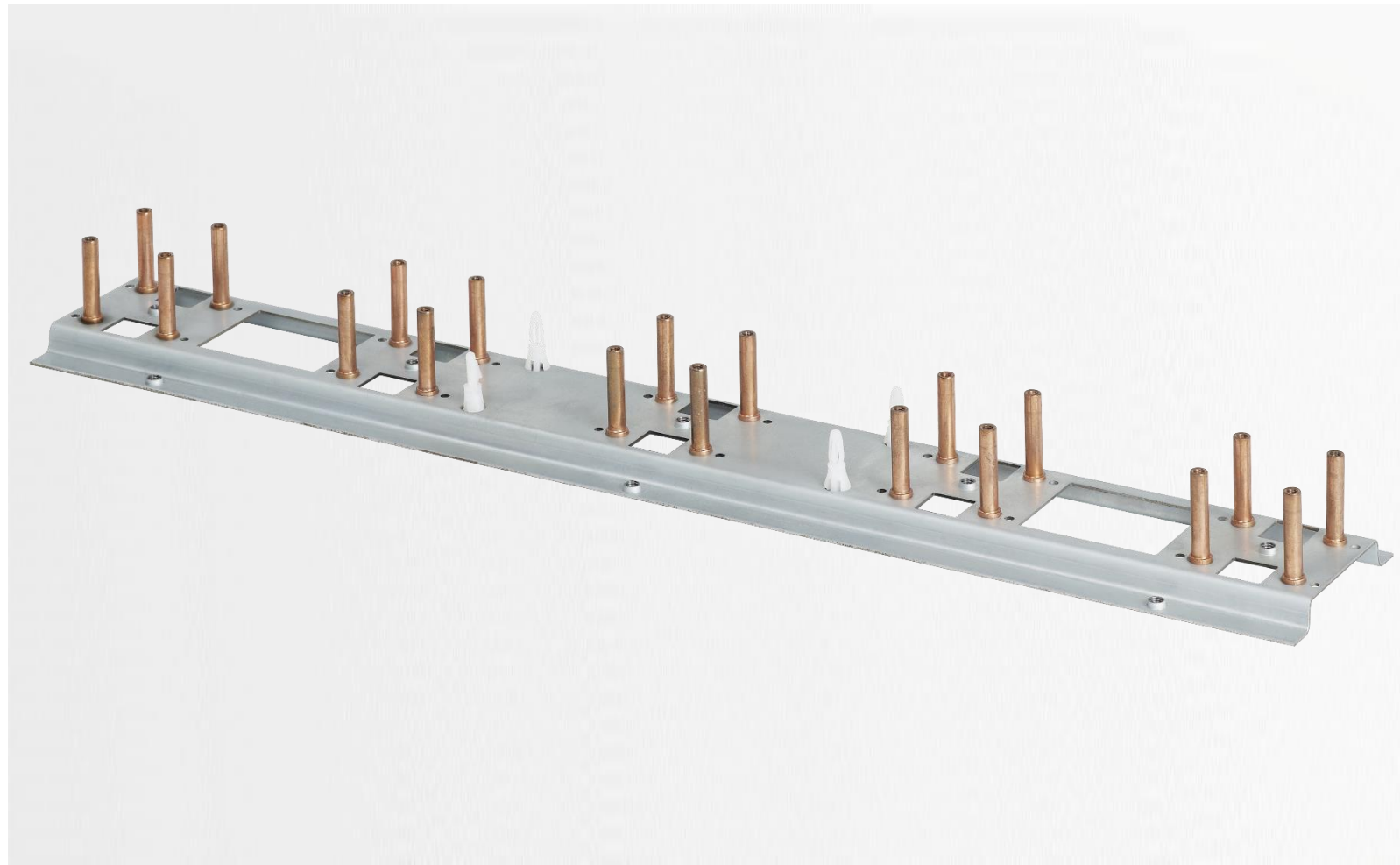
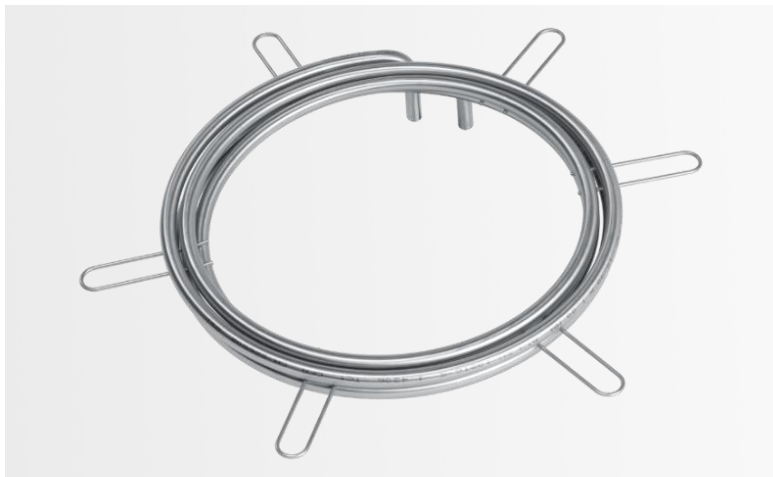
Bolt welding

- materials:
steel, galvanized steel, CrNi steels,
aluminum, copper, brass
- different materials can be combined
- no discoloration
- welding of pins, threaded bolts, threaded
bushings, sleeves, grounding lugs



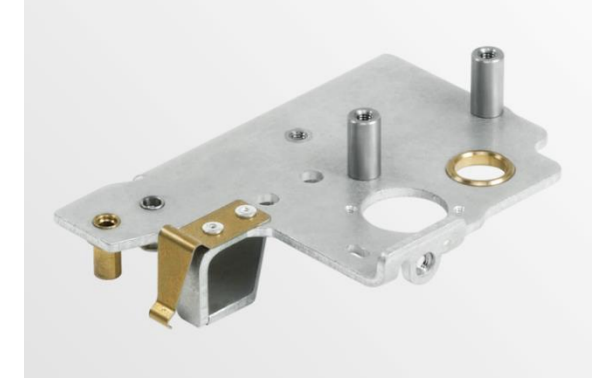






Joining technology

connect what
belongs together



Whether cold or warm

- ▶ Whether manually or as an inline solution. We use various processes to connect your components in a reliable manner.

Joining technology

- ▶ Wobble riveting
- ▶ Press riveting
- ▶ Hot riveting
- ▶ Pressing in bolts, bushes and nuts



FACTS

Orbital riveting

- orbital riveting of bolts with orbital shank diameter 8 mm
- materials: steel, CrNi-steels, aluminum, copper, brass, bronze

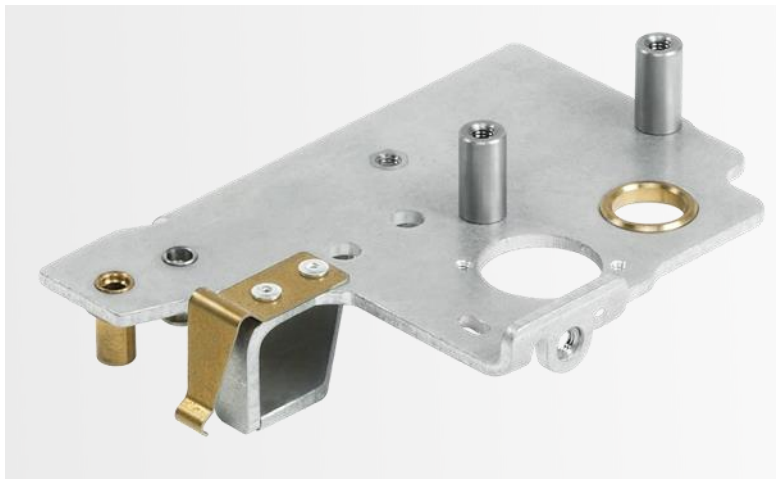
Hot Riveting

- processing of soft and hardened bolts
- materials: steel, CrNi-steels

Press in operations

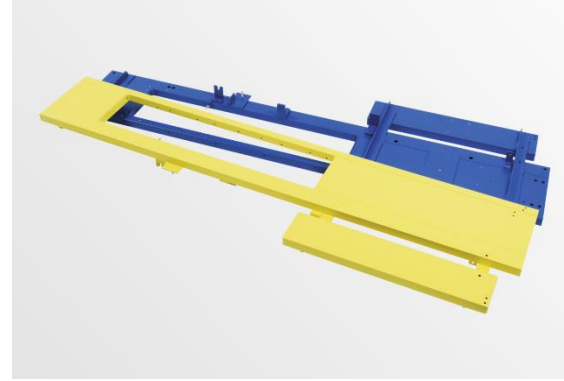
- materials: steel, galvanized steel, CrNi-steels, aluminum, brass, bronze
- high precision and repeatability
- no thermal influences





Surface treatment

customisation and
corrosion protection



Also possible in large quantities

- ▶ For the finishing of the components, we offer you various surface coating, as well as part labelling options.

Surface technologies

- ▶ Powder coating
- ▶ Laser engraving
- ▶ Tampon printing
- ▶ Electroplating and other coating processes are offered with our supply chain

FACTS

Materials

- steel
- steel galvanized
- aluminum
- casting materials

Powder coating

- Sizes:
2500 × 1400 × 800 mm
- pretreatment by chrome-free passivation
- layer thicknesses in the range of
30 - 150 μ
- corrosion resistance up to 1,000 h in salt
spray test
- huge range of colors, texture and gloss
level

Advantages of powder coating

- longer life of the parts
- realization of optical requirements
- customizing by individual color design





Assembly

complete solutions



Quantity-optimized processes

- ▶ Many of our customers appreciate the possibility of purchasing complete assemblies and thus optimally adapting our scope of services to their own production.
- ▶ We offer you unit-optimized processes from manual to fully automated assembly.



Fully automatic assembly

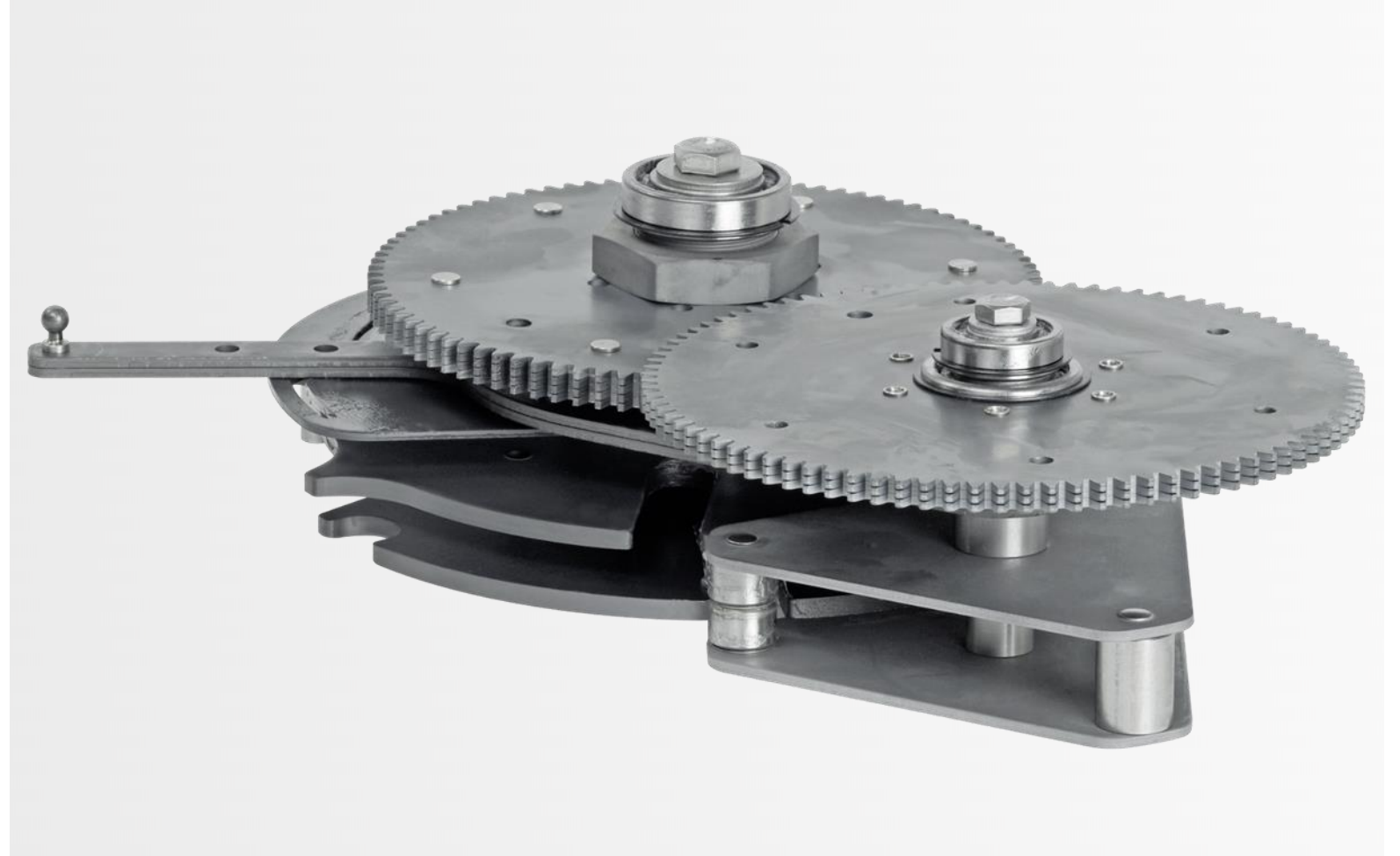
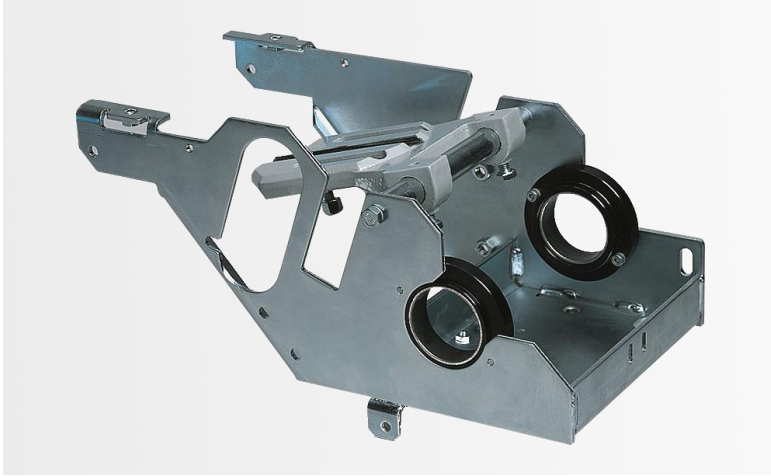
complete solutions



Efficient processes with constant quality

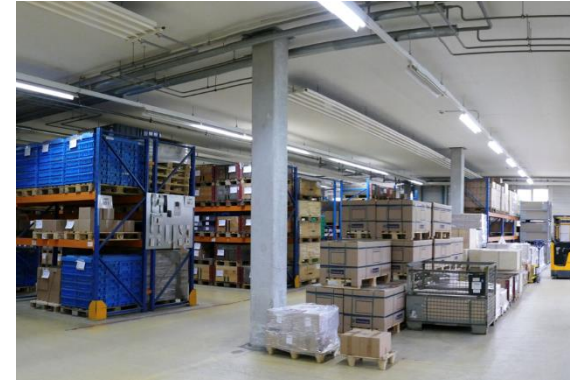
- ▶ Automatic joining, pressing, testing and packaging processes are performed on our fully automatic machines.
- ▶ By use of extensive sensor technology (part identification) and integrated quality checks, we pursue a zero-defect strategy.











World-wide

- ▶ Sustainable, resource-saving, environmentally conscious on all transport routes such as road, rail, air and over water.

Services

- ▶ **Packaging logistics** – picking, labeling
- ▶ **Warehouse logistics** – buffer stock capacity, EDI communication, CMI/VMI and empties management.
- ▶ **Transport** – fleet, export processing

We bring industries in shape



▶ **Automotive sector (30 %)**

It is a high aspiration to produce components in large quantities with a **zero-defect strategy** and at economical costs.



▶ **Building sector (10 %)**

Often these parts are invisible in the installed state, but important functional parts.

Some products remain visible and therefore also need to fulfill decorative requirements.

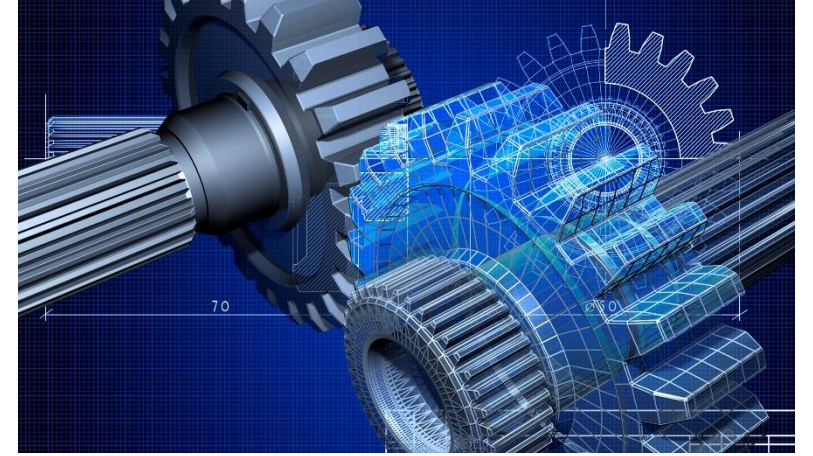


▶ **Electronic devices (30 %)**

In addition to dimensional accuracy, cleanliness and the visual requirements of **visible components** are very important.



We bring industries in shape



▶ **Electronic sectors (3 %)**

In addition to the dimensional accuracy of the products, technical cleanliness in the electronics is very important.

▶ **Energy sector (7 %)**

Safe handling of electricity requires robust solutions that often must withstand high mechanical stress.

▶ **Plant and mechanical engineering (10 %)**

Precise components for efficient systems.



We bring industries in shape



► Health & Medical Technology (5 %)

From individual parts to assemblies, our products are used in a wide range of health-related applications.

► Various sectors (5 %)

- Furniture industry
- Aviation
- Railway technology



Why with Jehle AG?



✓ Very high diversity - from product Co-Engineering, tooling, stamping up to 2-components, hybrid plastics engineering and assemblies – all in-house

✓ 75 years of experience

✓ Tool- and Mould making competence centre

✓ With 50 presses for smallest and largest series

✓ Welding-, mechanical- or surface processing

✓ People with visions

✓ Ecology – Our heart beats solar

Certificates



Certificate



The SQS herewith attests that the organisation named below has a management system that meets the requirements of the normative base mentioned.

Certified site

Jehle AG Etzgen
Büntenstrasse 125
5275 Etzgen
Switzerland

Scope

Manufacturing of stamping, forming, welding and assembly parts (without product design)

Normative base

IATF 16949:2016 **Quality Management System**
 Particular requirements for the application of ISO 9001:2015 for automotive production and relevant service part organizations

Reg. no. 38200
 IATF no. 0425324

Validity 17.09.2021 – 16.09.2024
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Successful
in the market with you.

With complete solutions from
engineering to the assembly.

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