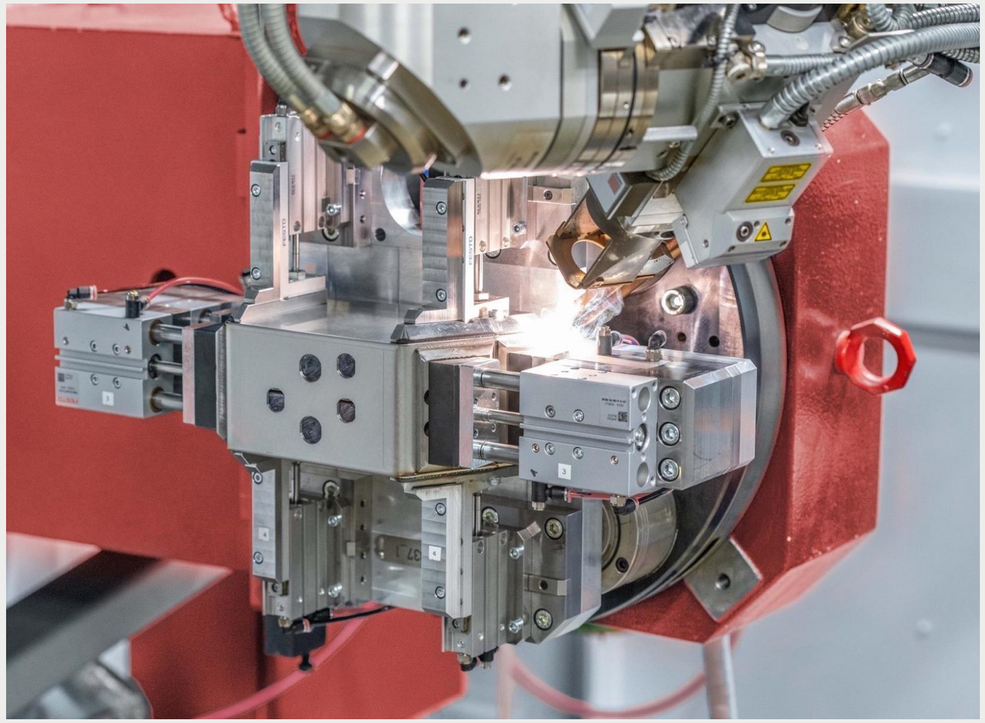
BBW LASER TECHNIK

AGENDA

- History
- Facts and figures
- BBW Lasertechnik today
- Organisation chart
- Sectors
- Laser material processing
- Additional services
- Contact



HISTORY

1997 **Hans Bürger** forms **BBW Lasertechnik GmbH in Vogtareuth** with two partners, on a 40 m² site

1999 Following continuous **growth**, the company relocates to Inzenham **near Prutting and a 300 m² site**

2001 BBW Lasertechnik is expanded with an **in-house construction department**

2002 One **director leaves** the company

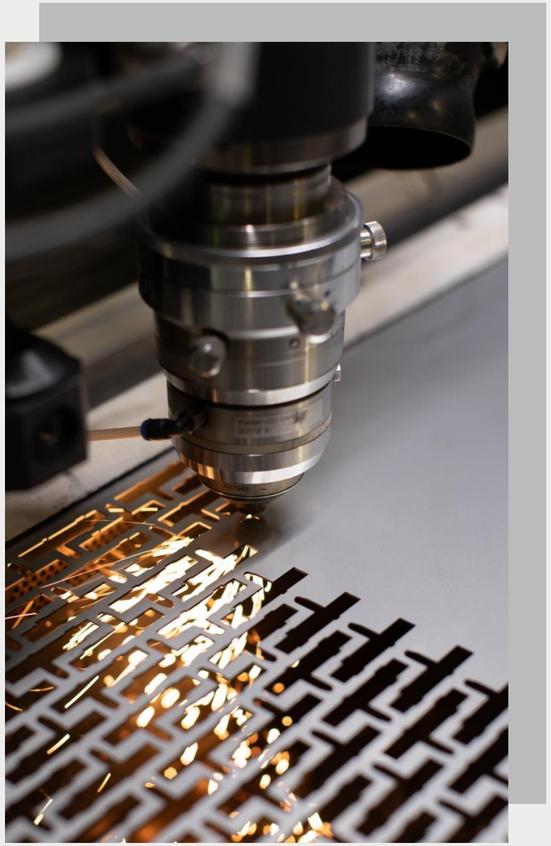
2009 BBW Lasertechnik moves to **Prutting business park onto a 2800 m² site**

2012 The production area is **expanded by 1100m²** and **new offices** and **social areas** are created

2015 **Hans and Andreas Bürger take on overall control of BBW Lasertechnik**

2018 BBW Lasertechnik expands its site **by a further 4000 m² & invests** in a **flatbed cutting system**

FACTS & FIGURES



1997
FORMATION

180
EMPLOYEES

10,000
OPERATIONS AREA IN M²

45
LASER SYSTEMS

BBW LASERTECHNIK TODAY

Family company & leading manufacturing service provider in Germany, Austria and Switzerland

45 laser systems: Laser welding, cutting, drilling and marking

180 qualified employees, including 19 trainees

Trainee careers: Industrial engineer, machinery and plant operator, warehouse clerk

Complete processing of assemblies via mechanical processing

In-house construction department for special fixtures and machines

€ 21 million turnover (2021)

Comprehensive quality management (ISO 9001, DIN 2303)

ORGANISATION CHART

Directors
Hans Bürger
Andreas Bürger

Quality Management Officer
Stephan Wagner

Welding Supervisor
Thorm Lembit Dinkelbach

Sales / Procurement
Georg Rinser

Construction
Gregor Niemczyk

Production
Hans Schnell

Quality & IT
Stephan Wagner

Research & Development
Eric Punzel

Accounts
Andreas Bürger

HR
Maria Bürger

Laser welding I
Michael Schmidmaier

Laser welding II
Ulrich Unterseer

Laser welding III
Thomas Loferer

Laser cutting
Florian Irob

Precision laser cutting
Tobias Bürger

Mechanical production
Martin Lechner

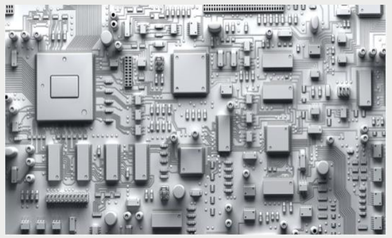
Plant engineering
Ludwig Redl

Warehouse / shipping
Johannes Kaindl

Apprenticeship
Michael Elger

SECTORS

Automotive



Electronics

Air conditioning & energy technologies

Machinery & construction

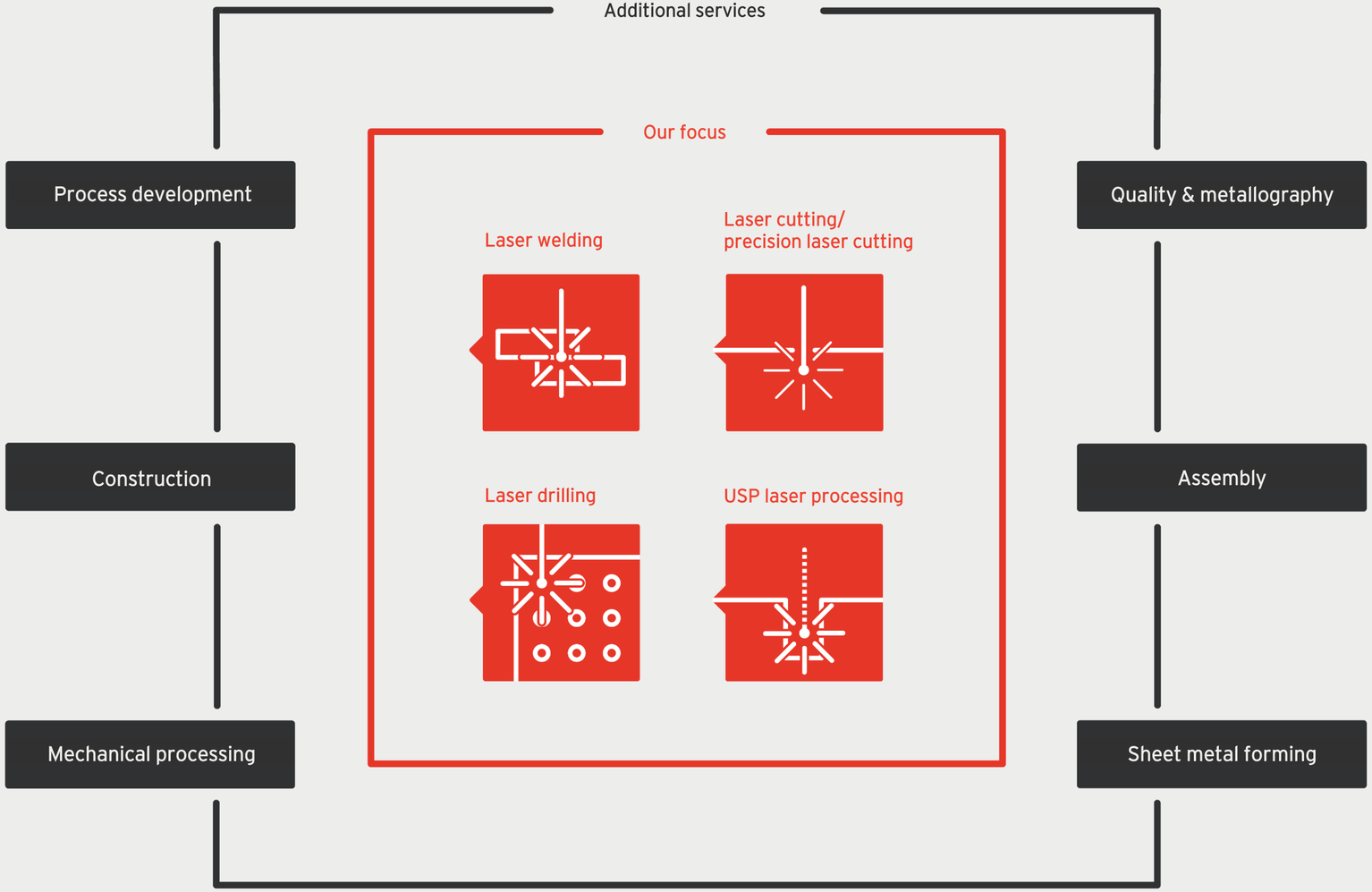
Sheet metal work

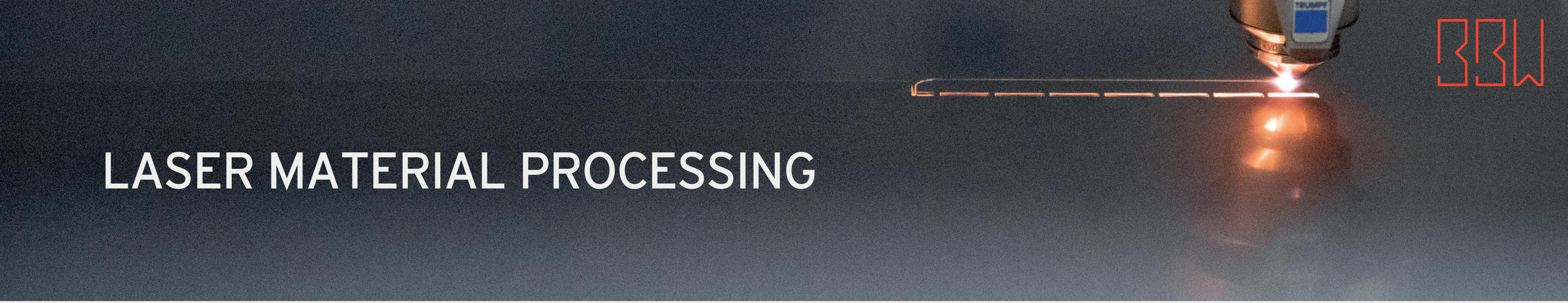
Aerospace industry

Pharma & biotechnology

Household appliances

SERVICES


Additional services
Our focus
Process development
Construction
Mechanical processing
Laser welding
Laser cutting/
precision laser cutting
Laser drilling
USP laser processing
Quality & metallography
Assembly
Sheet metal forming



LASER MATERIAL PROCESSING

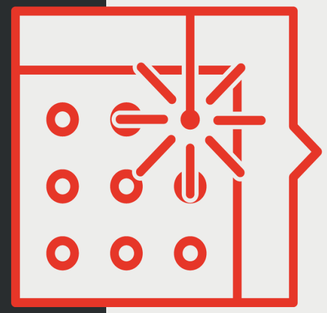
- Laser welding
- Laser cutting & precision laser cutting
- Laser drilling
- USP laser processing

OUR FOCUS

LASER WELDING

Weldable material thickness values

- Stainless steel and steel up to 12 mm
- Aluminium up to 8 mm
- Copper up to 4 mm
- Special materials



LASER DRILLING

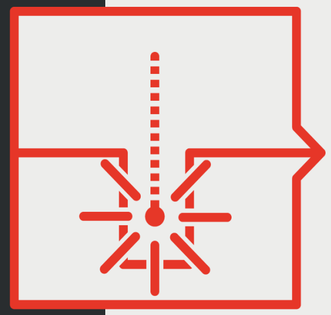
Processing limits

- Stainless steels up to 12 mm
- Aluminium up to 5 mm
- Steels up to 12 mm
- Copper up to 12 mm

LASER CUTTING/PRECISION LASER CUTTING

Cuttable material thickness values

- Stainless steels from 10 µm to 25 mm
- Aluminium from 100 µm to 20 mm
- Steels from 100 µm to 25 mm
- Copper from 100 µm to 8 mm
- Ceramics from 300 µm



USP LASER PROCESSING

Processable material thickness values with USP

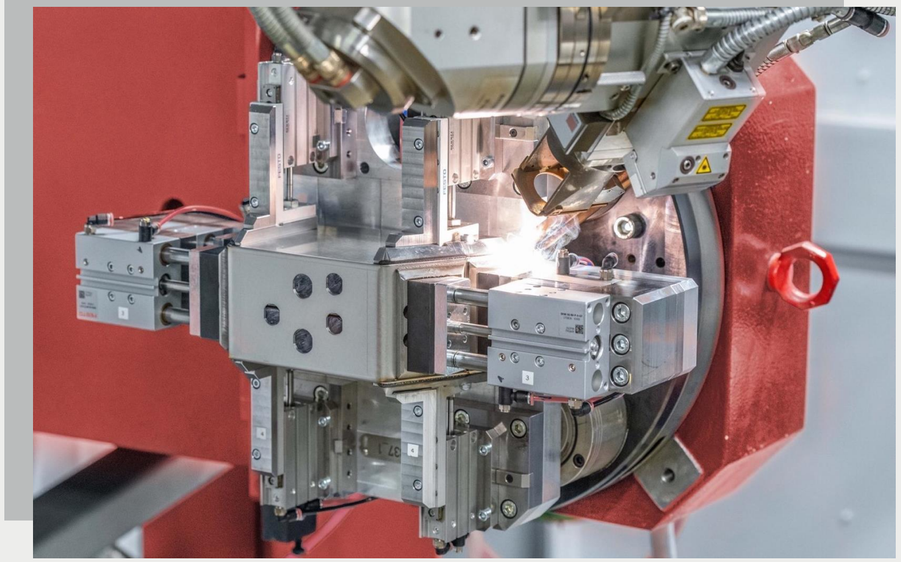
- Material-independent down to 10 µm

Hole diameter with USP

- Material-independent down to 50 µm

Laser welding

Interplay between fixture concept, suitable laser source &
quality monitoring



- 28 systems with travel lengths up to 4000 mm x 2000 mm x 750 mm
- Variable system technologies
- Typical materials: Steel, aluminium, copper, tantalum, titanium, cobalt, sintered materials
- Welding depths up to 12 mm
- Extensive options for weld seam testing
- Examples: Copper alloy busbars, electronic assembly housings

Laser welding

Plant Engineering

- 28 systems for laser welding
- Weld spots down to 0.02 mm diameter
- Pulse and continuous lasers
- Solid state lasers (rod, disc, fibre lasers), CO2 lasers, diode lasers
- Single & multimode sources
- Travel length up to 4000 mm x 2000 mm x 750 mm
- Solid state optics and scanner optics with processing field up to 1200 mm x 1200 mm
- In-house fixture and machine construction

Weld seam tests

- Helium leak test
- Pressure differential test
- Destructive test/metallography and hardness test
- Non-destructive test (VT, PT, RT)
- Water bath test
- Torque test
- Online laser welding monitoring (LWM)

Applications

- Copper alloy busbars
- Aluminium cell connectors (for lithium/ion batteries)
- Special steels and titanium materials for aerospace
- Nickel-based alloys for aerospace applications
- Highly heat-resistant steels for fuel cells
- Stainless steels for mechanical engineering, medical technology and food technology
- Aluminium for heat exchangers
- Helium-tight welding of various materials
- High-pressure welds up to 150 bar
- Electronic assembly housings
- Fully automated systems up to 1,000,000 parts per year for the automotive industry
- Cosmetic seams without pores and inserts for hygiene areas
- Welding with wire additives
- Rounding of edges with welded seams
- Housing construction

Strengths

- Sophisticated material combinations
- Need for complex clamping technology
- First test up to series production
- Use of the right beam source for every application, including processing optics
- Low welding distortion and low heat input
- Use of extensive quality assurance measures
- Joining to complete assemblies by laser welding
- Removing tarnish using various pickling processes or polishing
- Can be combined with TIG, MIG/MAG welding and laser marking

Materials

Weldable material thicknesses starting from 0.05 mm

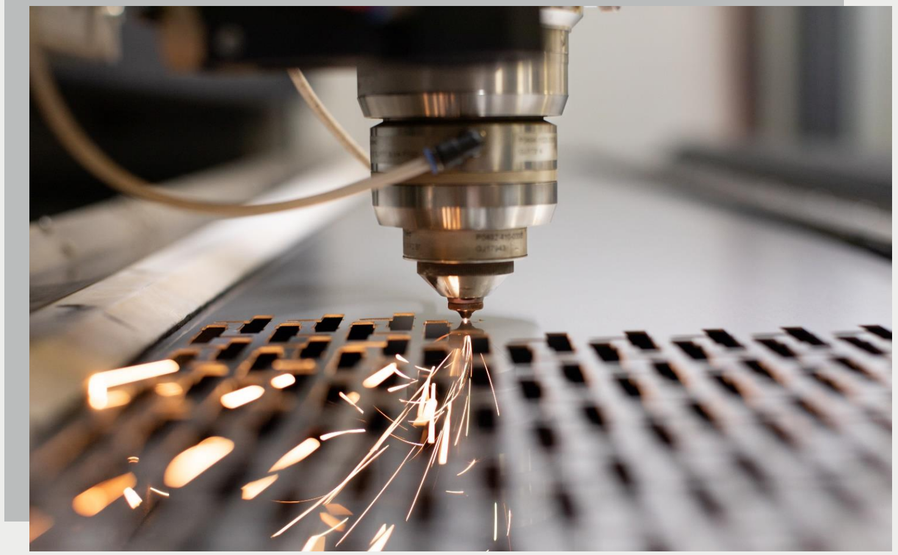
- Steels up to 12 mm
- Aluminium up to 8 mm
- Copper up to 4 mm

Special materials and more

- Tantalum
- Titanium
- Cobalt
- Sintered materials

Laser cutting/ precision laser cutting

Precision in the µm range with product-specific production concepts



- 10 systems with travel lengths up to 4000 mm x 2000 mm x 750 mm
- Pulse and continuous beam lasers, solid-state lasers (rod and fibre lasers), USP lasers, single & multimode sources
- Precision laser cutting down to 10 µm
- Typical materials: Stainless steel, aluminium, copper, ceramics
- Applications: Housing components, e.g. for lithium/ion batteries or electronic assembly housings, semiconductor industry, ablation, tube processing, etc.

Laser cutting

Plant Engineering

- 4 systems for laser cutting
- Up to 6 kW moderate output power
- Solid-state lasers (disc and fibre lasers)
- Travel length up to 4000 mm x 2000 mm x 750 mm
- CO2 lasers

Applications

- Components for the aerospace industry
- Metallic housing components for lithium/ion batteries
- Components for the semiconductor industry
- Assemblies for the food industry
- Tube processing

Finishing work

- Cutting edge processing with barrel finishing
- Chemical pickling
- Manual finishing work
- Mechanical processing

Strengths

- 3D laser cutting
- Board sizes, automatic assembly
- Challenging materials
- Production of individual components for assemblies

Materials

Cuttable material thickness values

- Stainless steels up to 25 mm
- Aluminium up to 20 mm
- Steels up to 25 mm
- Copper up to 8 mm

Precision laser cutting

Plant Engineering

- 6 systems for precision laser cutting
- Up to 500 W moderate output power
- Pulse and continuous lasers
- Solid-state lasers (rod and fibre lasers)
- Ultra-short pulse lasers
- Single & multimode sources
- Travel length up to 2700 mm x 350 mm x 300 mm

Applications

- Components for the aerospace industry
- Medical technology applications
- Metallic housing components for lithium/ion batteries
- Components for the semiconductor industry
- Assemblies for the food industry
- Surface structuring
- Defined ablation

Finishing work

- Cutting edge processing with barrel finishing
- Chemical pickling
- Manual finishing work
- Mechanical processing

Strengths

- Precision laser cutting of thin sheets and foils down to 0.01 mm on systems constructed in-house (conventional)
- "Cold ablation" possible via USP technology at tolerances < 5 µm
- Challenging materials
- Thin tube processing
- Filigree contours
- 3D laser cutting
- 3D ablation
- Production of individual components for assemblies

Materials

Cuttable material thickness values

- Stainless steels down to 10 µm
- Aluminium down to 100 µm
- Steels down to 100 µm
- Copper down to 100 µm
- Ceramics down to 300 µm
- Various materials via USP laser processing

Laser drilling

Laser drilling as an alternative production path for a variety of applications

- 5 systems with travel lengths up to 2100 mm x 380 mm x 400 mm
- Plant engineering: Pulse lasers, solid-state lasers (rod and fibre lasers), ultra-short pulse lasers
- Typical materials: Steels, stainless steels, copper, aluminium
- Micro drillholes up to 30 µm
- Applications: Filters and screens for the automotive industry, venting holes for injection moulds, tube processing

Laser drilling

Plant Engineering

- 5 systems for laser drilling
- Up to 400 W moderate output power
- Pulse lasers
- Solid-state lasers (rod and fibre lasers)
- Ultra-short pulse lasers
- Travel paths up to 2100 mm x 380 mm x 400 mm

Applications

- Laser drilling of filters and sieves for the automotive industry
- Venting holes for injection moulds
- Tube processing

Finishing work

- Chemical pickling
- Manual finishing work
- Mechanical finishing work

Strengths

- Micro drillholes up to 30 µm
- Shutter on-the-fly up to 150 Hz
- Challenging materials
- Thin tube processing
- Production of individual components for assemblies

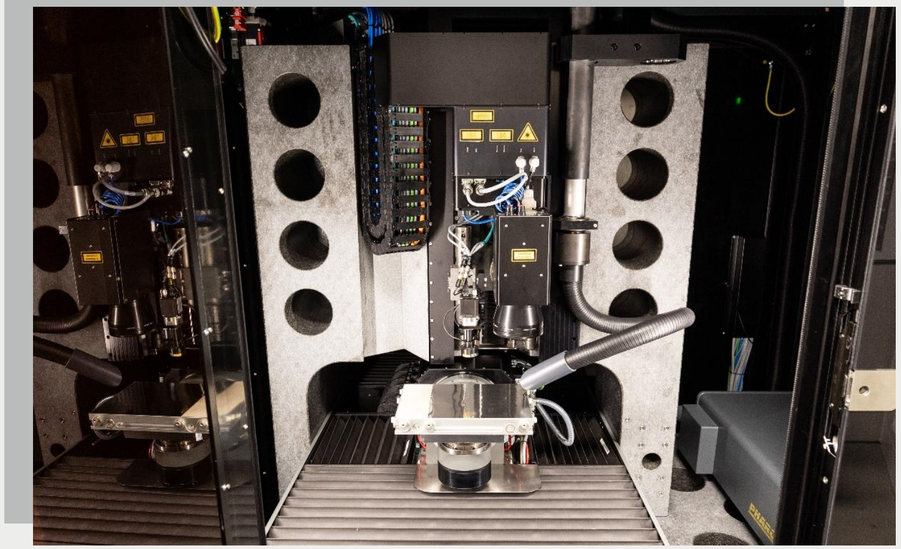
Materials

Laser drilling processing limits

- Stainless steels up to 12 mm - minimum drill hole exit diameter 0.15
- Aluminium up to 5 mm - minimum drill hole exit diameter 0.25
- Steels up to 12 mm - minimum drill hole exit diameter 0.15
- Copper up to 12 mm - minimum drill hole exit diameter 0.25

USP laser processing

Microprocessing in pico & femtosecond ranges



- System for microstructuring with travel approx. 200 mm x 200 mm
- Applications material-independent
- Laser precision cutting/drilling of thinnest sheets in the single-digit µm range
- Cold ablation possible via USP technology at tolerances < 5 µm

USP laser processing

Plant Engineering

- 1 system for microstructuring
- Up to 20 W moderate output power, 190 fs up to 20 ps pulse duration as well as 1 MHz repetition rate
- Ultrashort pulse solid-state laser
- Travel length approx. 200 x 200 mm

Applications

- Components for the aerospace industry
- Filigree components for the medical sector
- Components for the food industry
- High-precision parts, e.g. microfilters

Finishing work

- Thanks to USP processing, often not required
- Chemical pickling
- Ultrasound bath

Strengths

- Laser precision cutting of thinnest sheets in the single-digit µm range
- Cold ablation possible via USP technology at tolerances < 5 µm
- Material-independent processing
- 3D engraving on tube materials
- Selective layer ablation (e.g. paint)
- Surface functionalisation

Materials

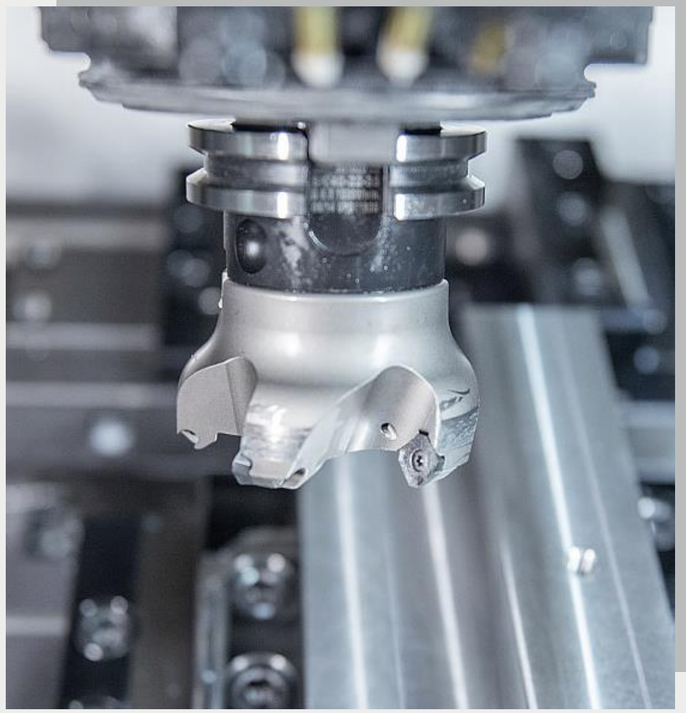
Processable material thickness values with USP

- Material-independent down to 10 µm

Hole diameter with USP

- Material-independent down to 50 µm

ADDITIONAL SERVICES



- PROCESS DEVELOPMENT
- CONSTRUCTION
- MECHANICAL PROCESSING
- SHEET METAL WORK
- ASSEMBLY
- QUALITY & METALLOGRAPHY

PROCESS DEVELOPMENT

Feasibility studies and tests

Sample production and prototypes

Process development

Expert partner in
product development &
product creation

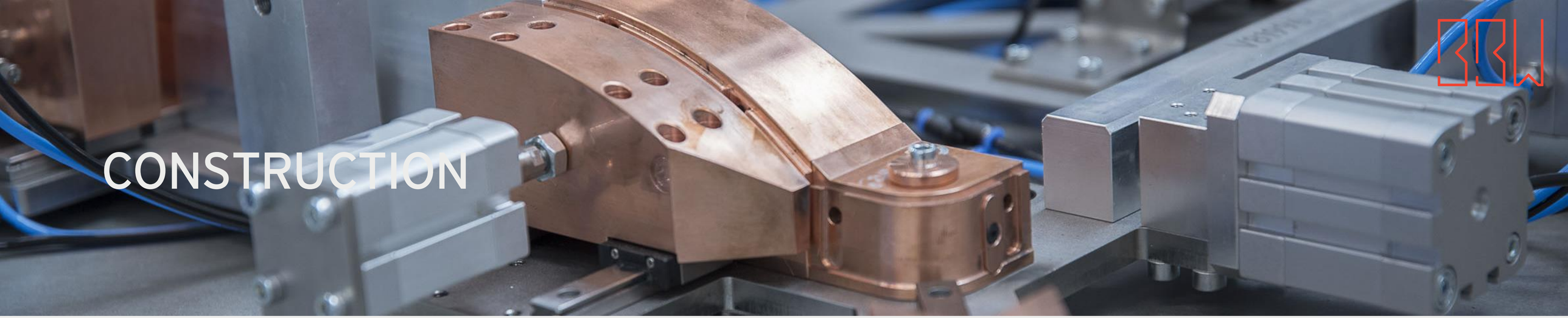
Feasibility studies and tests

- Suitable configuration from laser source, optics and plant engineering
- Multiple different laser sources
- Determination of the corresponding parameters
- Evaluation of the tests in the in-house laboratory
- Process analysis using
  - Temperature measuring instruments
  - Micrograph analysis
  - Optical borehole measurements
  - 3D geometry measurements

Sample production and prototypes

Benefits

- Quick and efficient creation of the necessary devices
- Option to transfer the parameters used into the customer's manufacturing processes after the test phase



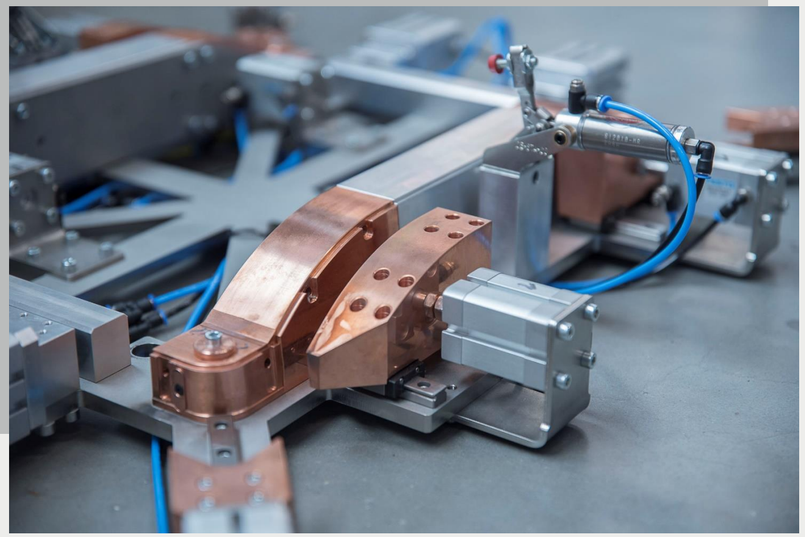
CONSTRUCTION

Fixture construction

Machine engineering & automation technology

Fixture construction

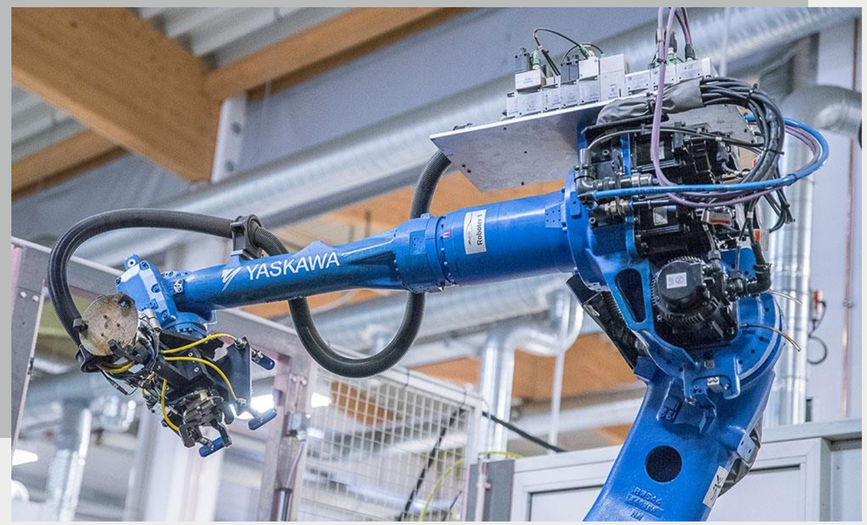
Development of custom fixtures



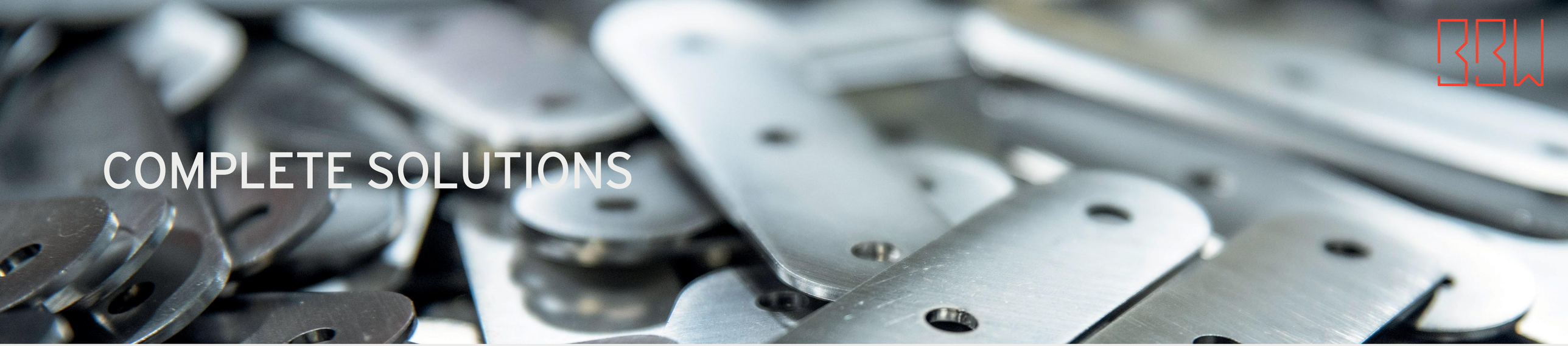
- Specially adapted fixtures manufactured by our in-house equipment construction team
- Optimum coordination and short lead times
- Modern CAD system
- Additional components – such as drives or sensor technology – can be integrated

Machine engineering & automation technology

In-house systems with the latest technology



- Construction of complete CNC-controlled laser processing machines
- High-precision and dynamic web movement as the basis for precise laser processing
- From project planning to the construction of the machine to parameterisation, programming and optimisation of CNC/PLC controls



COMPLETE SOLUTIONS

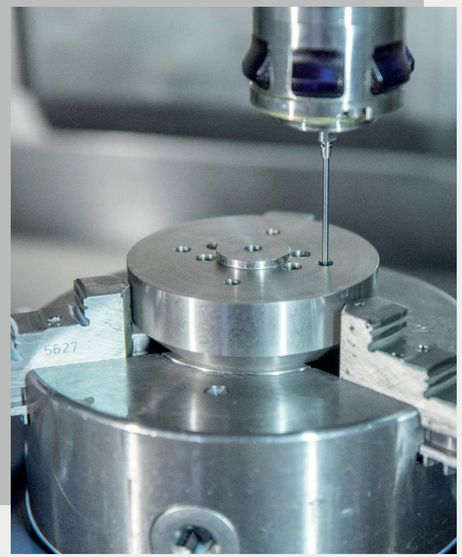
Mechanical processing

Sheet metal work

Assembly

Mechanical processing

Mechanical production for post-processing parts & production of further individual parts for complete assemblies



- Production of individual parts for assemblies by machining production processes, e.g. turning and milling
- Finishing work on laser-processed component parts
- Manufacture of component parts for our fixture and mechanical engineering division

Sheet metal work

Edge and surface treatment & bending

Bending

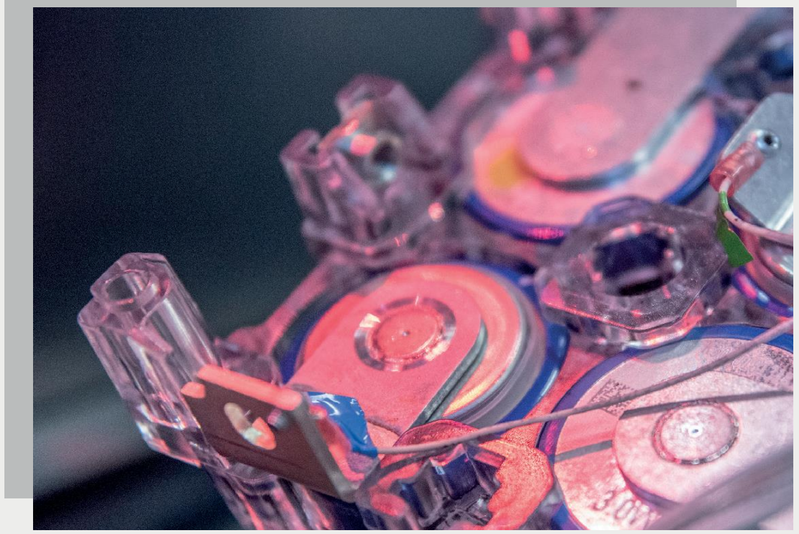
- Press breaks with up to 850 kN of power
- Shaping of steel sheets up to 6 mm thick
- Reproducible processing of a wide range of materials and component dimensions, from a few millimetres up to 2 metres (especially in the thin sheet sector)
- Optimum preparation for subsequent welding processes by cleaning the semi-finished products in a washing system

Edge and surface treatment

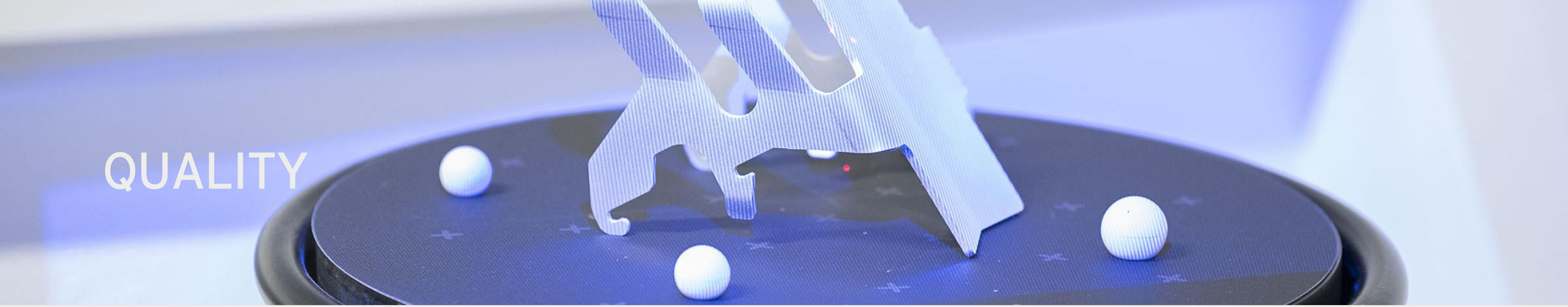
- Machining of laser cut parts with wide-belt sanders to treat both edges and surfaces
- In-house pickling liquor facilities

Assembly

Assembly – Fast, precise & flexible



- Integration of pre-assembly, interim and final assembly
- Wide range of applications: for example, mounting modules for energy storage, adhering wiring harnesses with temperature sensors and integrating sensitive components
- Subsequent examination using Vision System, microscope or helium leak tester
- Assembled and cleaned components can also be shipped in the customer's packaging design



QUALITY

A basic prerequisite for the success of our work is quality

Plant Engineering

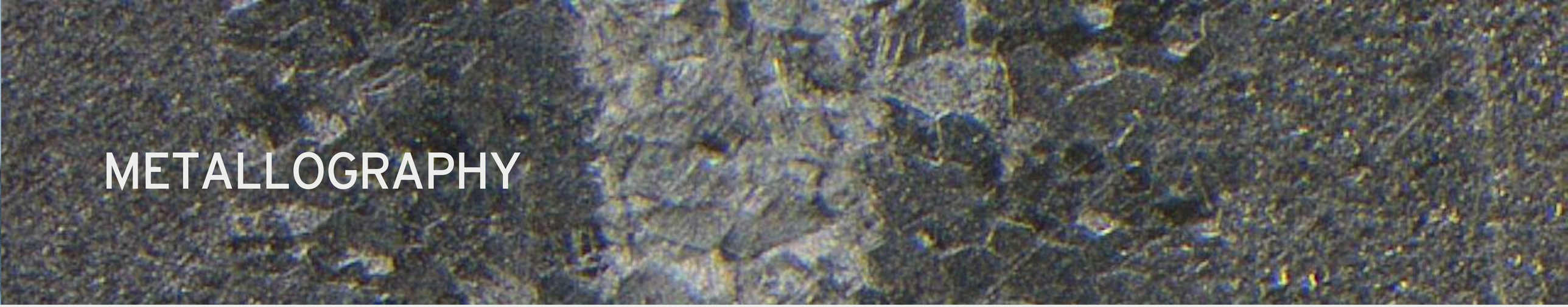
- Strip light projector
- Coordinate measuring machine
- Optical measuring machine
- 3D confocal microscopy
- Roughness measuring device
- Concentricity measuring device
- Height measuring devices
- Project projector

Applications

- Initial samples conforming to VDA standard
- Process development
- Failure mode and effects analysis (FMEA)
- Tests during series production
- Incoming and outgoing goods inspections

Certifications

- DIN EN ISO 9001:2015
- DIN 2303



METALLOGRAPHY

In-house lab to support process development and quality assurance in series production

Test procedures

- Micrograph analysis
- Visual testing (VT)
- Penetrant Testing (PT)
- Ultrasonic Testing (UT)
- Magnetic Particle Testing (MT)
- Radiographic Testing (RT)
- Hardness testing

Applications

- Feasibility studies and tests
- Process development
- Tests during series production

Certifications

- VT2 tester certified to DIN EN ISO 9712
- PT2 tester certified to DIN EN ISO 9712
- UT2 tester certified to DIN EN ISO 9712

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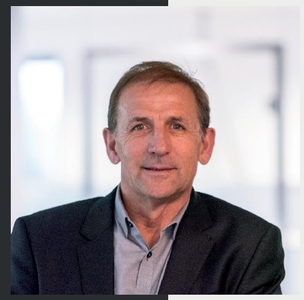
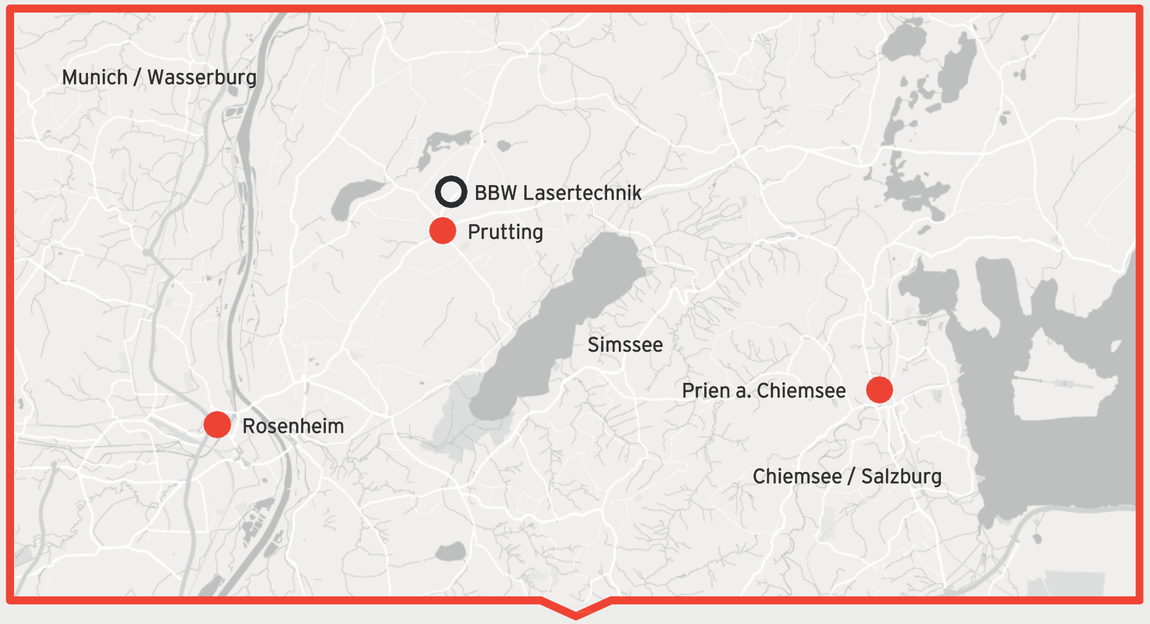
CONTACT



HANS BÜRGER
Director

ANDREAS BÜRGER
Director



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Thank you