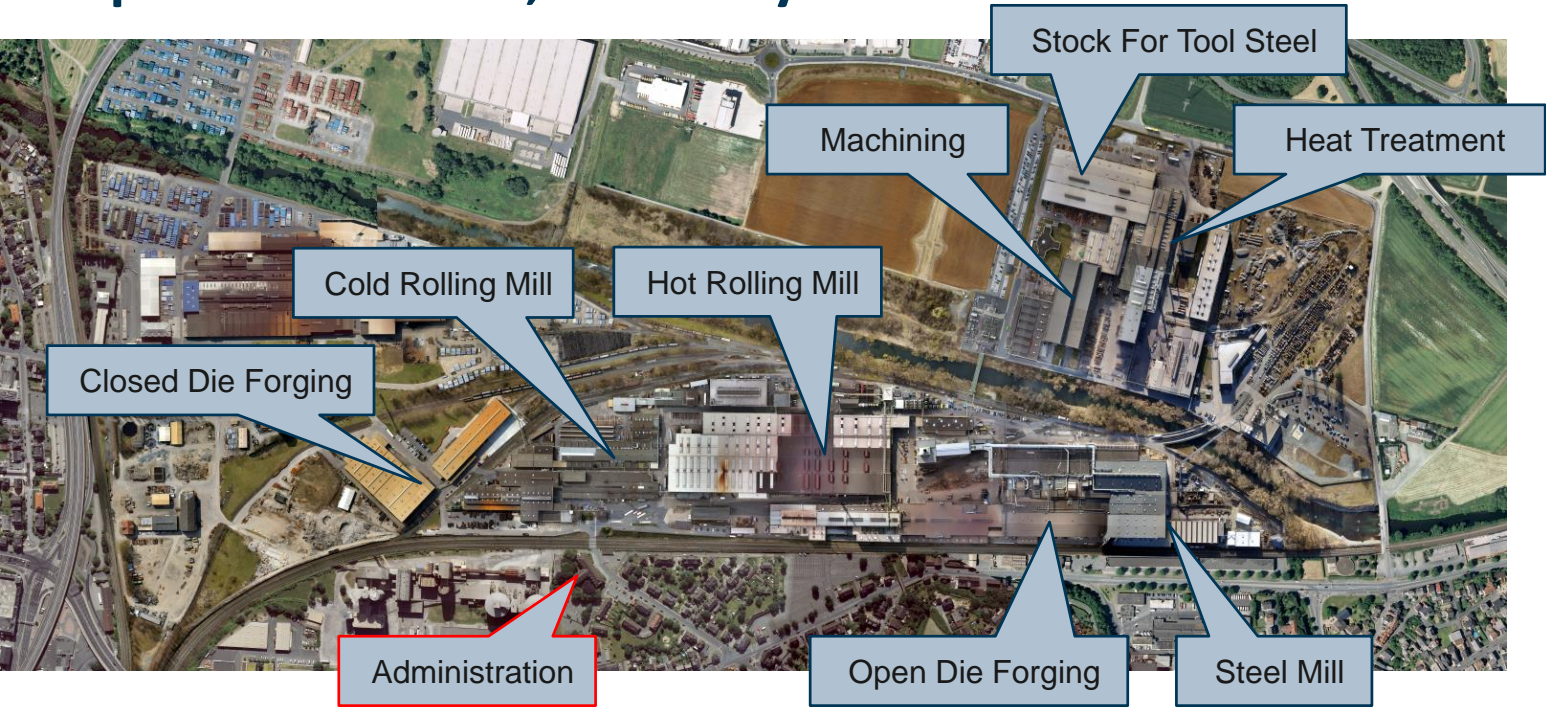




SPECIALIZED ON YOU

Buderus Edelstahl GmbH
www.buderus-steel.com

Our plant in Wetzlar, Germany



History

1731

Johann Wilhelm Buderus I founds the Friedrichshütte on 14 March.

1884

Buderus goes public and becomes one of the first public limited companies in Germany.

1965

Merger with Röchling'schen Eisen and Stahlwerken.

2005

Böhler-Uddeholm AG purchases 100 percent of the shares in Buderus Edelstahl.

2014

1,560 employees generate an annual turnover of over 410 million euros.

1836

Johann Wilhelm Buderus II takes over the commercial and technical management of the Friedrichshütte charcoal furnace plant (Gießen district).

1920

Founding of the joint venture Stahlwerke Buderus-Röchling Aktiengesellschaft, later Edelstahlwerke Buderus AG.

2003

Buderus Edelstahl becomes part of Robert Bosch GmbH.

2007

The Austrian company voestalpine AG purchases Böhler-Uddeholm AG.

Top producer of high-grade special steels

OUR COMPANY

Buderus Edelstahl GmbH is one of the top producers of high-grade special steels in the world.

ALL FROM ONE SOURCE

From melting through to the end product, the whole production process takes place within the company.

OUR PROMISE

This ensures that we can guarantee our customers:

- Implementation of individual requirements
- Compliance with high quality standards
- Speed
- Flexibility when processing orders
- Short through-put times

SERVICE & QUALITY

Our company is also characterized by:

- A high level of service
- A transparent and first-class materials management and quality assurance system

Group structure voestalpine AG

Steel Division

voestalpine Stahl GmbH

- voestalpine Grobblech
- voestalpine Giesserei Linz
- voestalpine Anarbeitung
- voestalpine Stahl Service Center
- voestalpine Eurostahl
- Logistik Service

High Performance Metals Division

voestalpine Edelstahl GmbH

- Böhler Edelstahl
- **Buderus Edelstahl**
- Villares Metals
- Böhler-Uddeholm Deutschland
- Uddeholms AB
- ASSAB Pacific
- Eschmann Stahl
- Böhler Bleche
- Böhler-Uddeholm Italia
- Böhler Schmiedetechnik
- Böhler-Ybbstal Profil

Metal Engineering Division

voestalpine Metal Engineering GmbH & Co KG

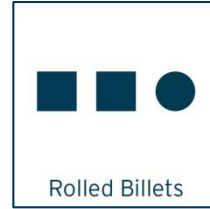
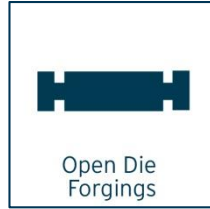
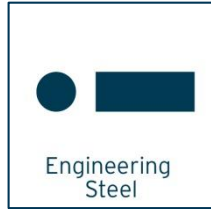
- voestalpine Schienen
- TSTG Schienen Technik
- VAE
- voestalpine Rail Center Duisburg
- voestalpine Railpro B.V. (70%)
- voestalpine Klöckner
- Bahntechnik
- voestalpine Tubulars
- voestalpine Stahl Donawitz
- voestalpine Austria Draht
- Böhler Welding Holding

Metal Forming Division

voestalpine Metal Forming GmbH

- voestalpine Krems
- voestalpine Straßensicherheit
- voestalpine Krems Finaltechnik
- Nedcon Groep
- Sadef
- Metsec plc
- Roll Forming
- voestalpine Präzisionsprofil
- voestalpine Profilform
- ZAO voestalpine Arkada Profil
- Société Profilafroid
- Meincol Distribuidora de Aços
- Böhler-Uddeholm Precision Strip
- voestalpine Polynorm
- voestalpine Europlatinen
- voestalpine Rotec
- voestalpine Stamptec

Our products



IN WETZLAR

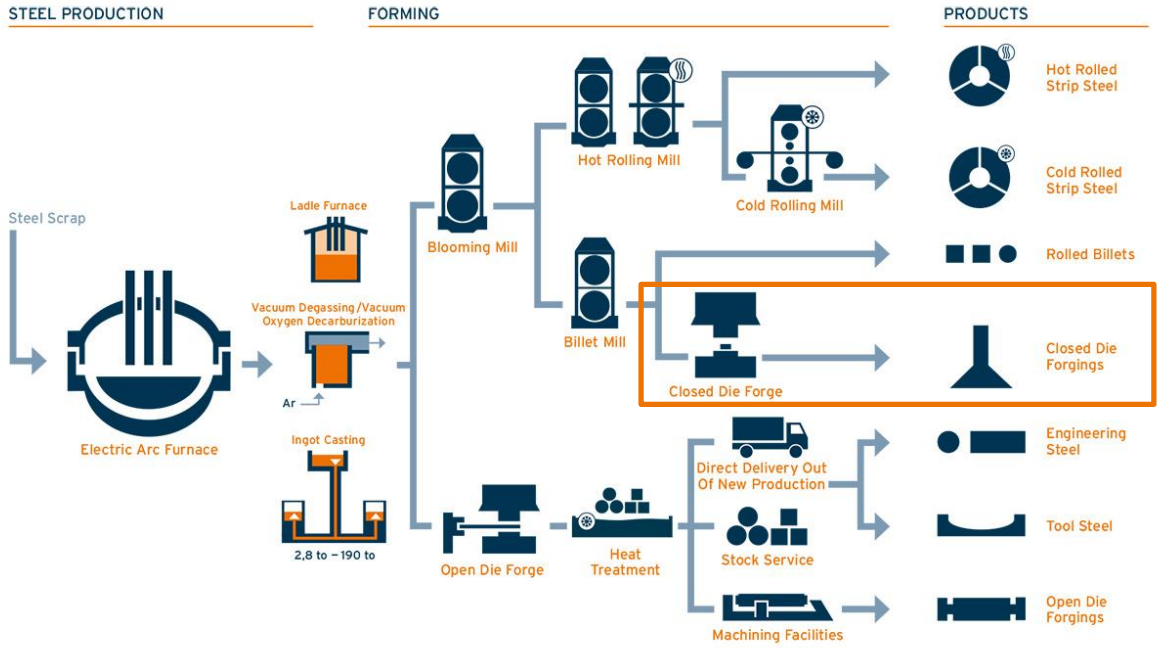
Our six business units produce products of the highest quality.

WORLDWIDE

We are a global player in:

- Automotive and drive technology
- Plant and machine engineering
- Tooling and mould making

Our production process



Our effort for your target

OUR PRODUCTION TECHNOLOGY

The entire production process, from melting through to the end product, takes place at our site in Wetzlar:

- Electric arc furnace with a capacity of 100 to
- Secondary metallurgy (LF-VD/VOD system)
- Casting to rolling ingots with a weight of 2.8 to 4.6 to
- Rolling on computer-managed blooming and billet mills
- Six press lines with compression forces between 25 and 100 MN
- Heat treatment according to specifications

YOUR BENEFITS

This ensures that we can guarantee our customers:

- High degree of micro-purity
- Low amount of trace elements
- Low segregation
- Narrow tolerance limits
- Hardening capacity adapted precisely to the relevant use
- Stable quality features over many years

VOESTALPINE COMPANY KEY FIGURES

Financial Year 2019/2020



500 LOCATION
50 NATION
5 CONTINENT



EMPLOYEES
49.682



TURNOVER
12,7 Bn €

BUDERUS COMPANY KEY FIGURES

Financial Year 2019/2020



RAW STEEL PRODUCTION
257.000 t



DISTRIBUTION
187.688 t



TURNOVER
335,8 Mio. €



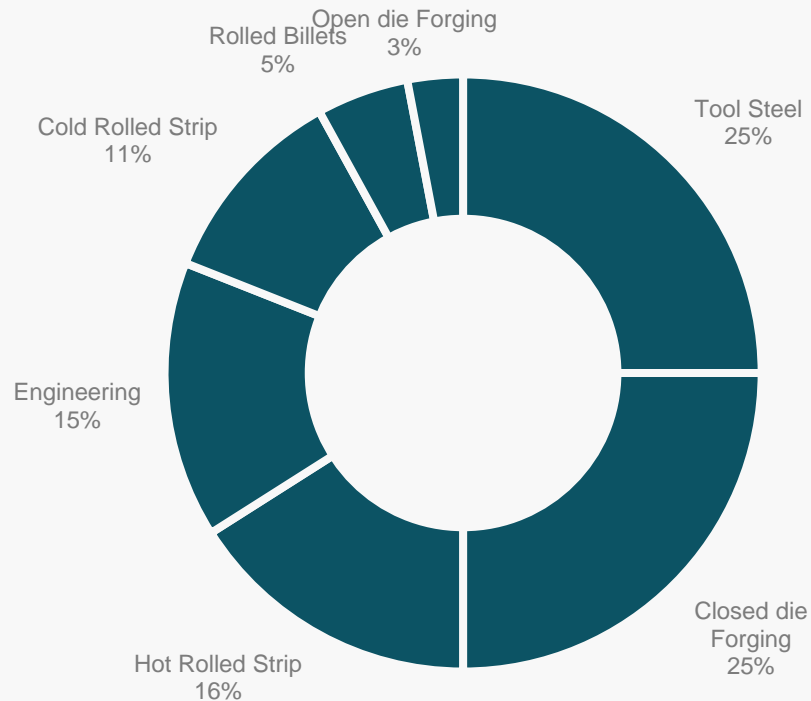
EMPLOYEES
1.482



APPRENTICE
78

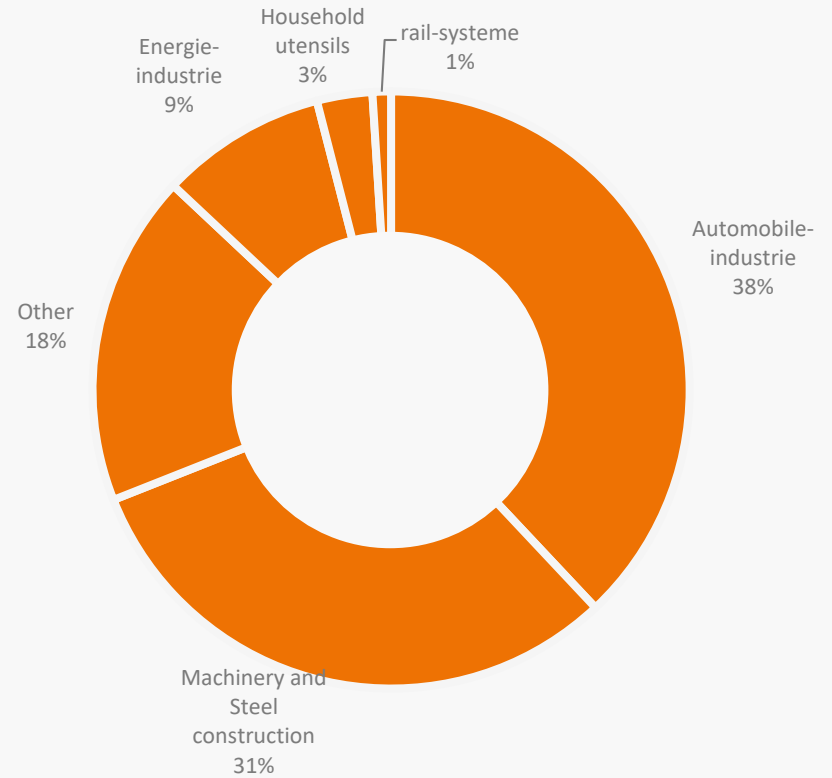
TURNOVER BY PRODUCT GROUP

Financial Year 2019/2020



SALES REVENUE BY INDUSTRY

Financial Year 2019/2020



Sales partners

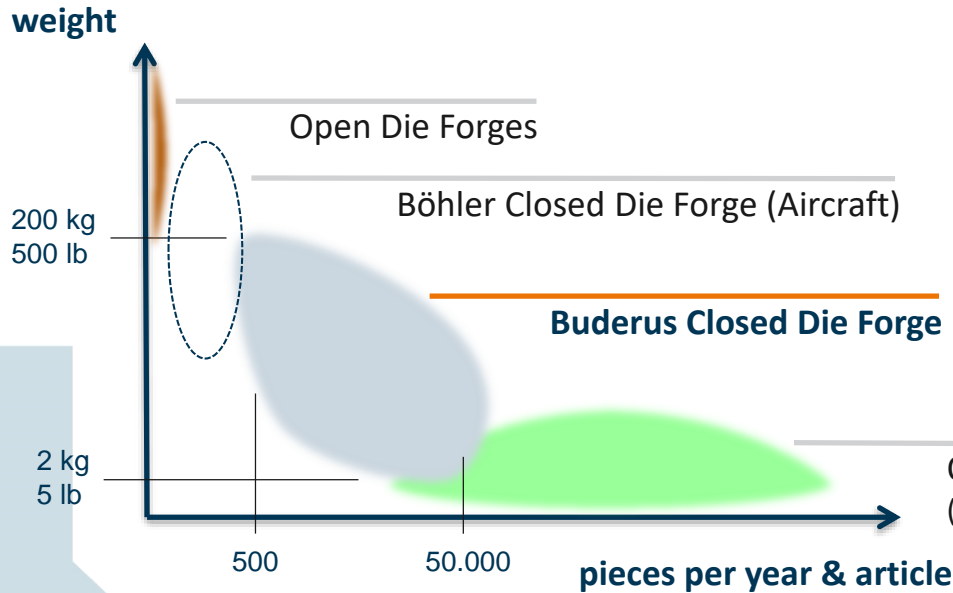




Division – Closed Die Forging



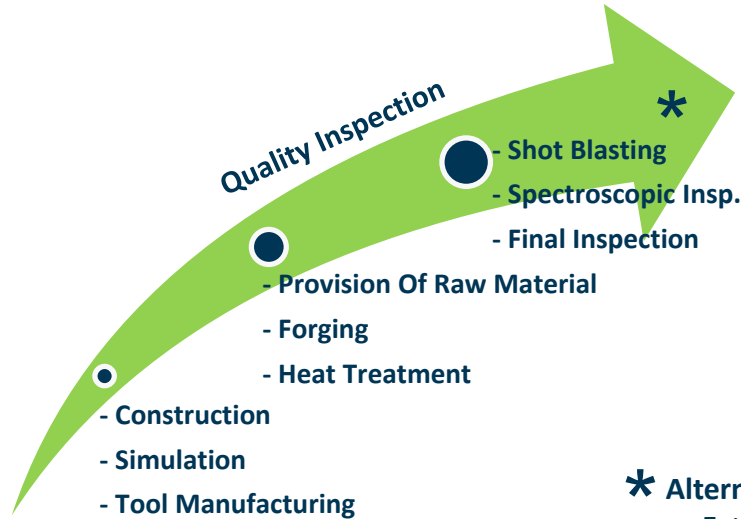
Our market position



- Product weights: 2 - 200 kg / 5 – 500 lbs
- Production per year: 500 - 50,000 pcs.
- Typical batches: 500 - 5,000 pcs.
- Frequency: 1/month - 1/10 years
- Active Products: approx. 500
- 6 press lines
- Capacity: ≈200 tons/day
- Total production: 50.000 tons p.a.
- 250 employees



Inquiry with customer drawing
resp. CAD-Data → Order



Product ready for dispatch

- * **Alternative steps:**
- External machining
 - Externe surface treatment

Customer orientation

- Joint development
- Long-term experience
- Focus on customer value

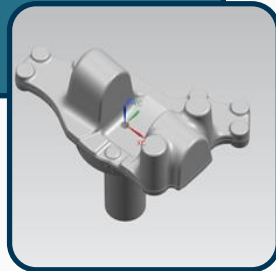
Continuous improvement

- Process reliability
- Efficiency increase

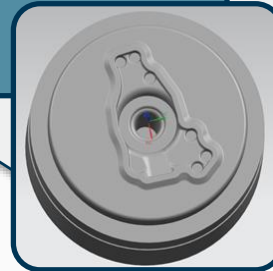
Finished Part



Raw Part



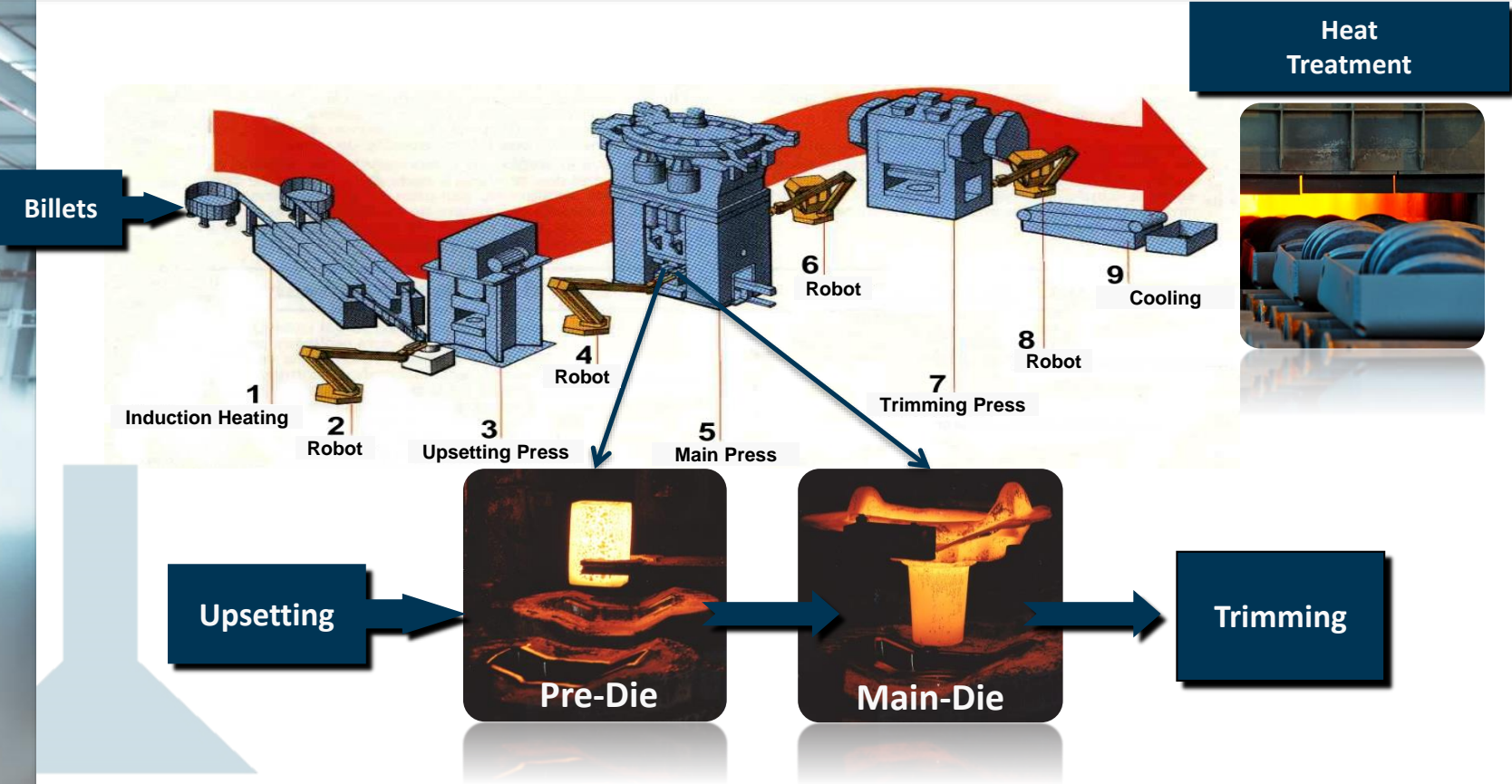
Tool

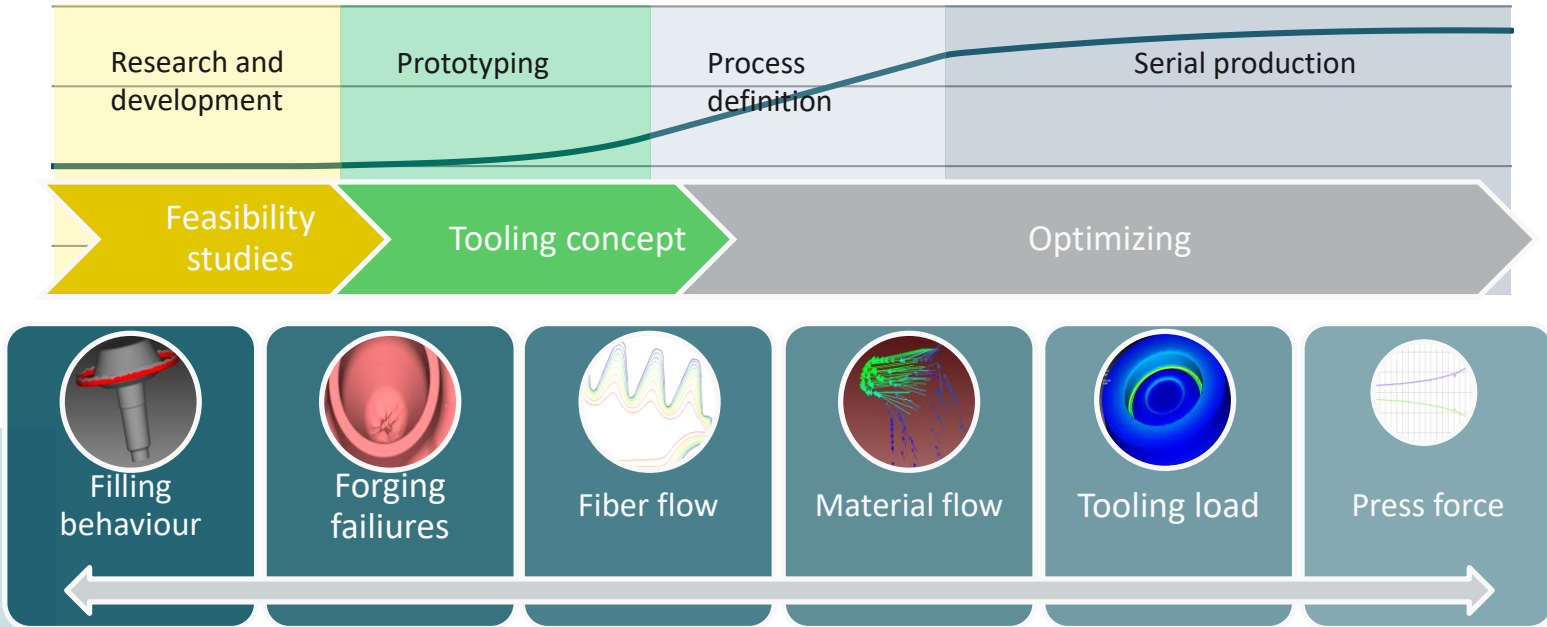


Production



Die forging process

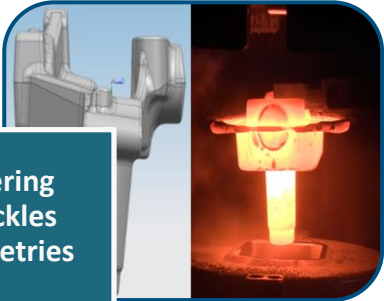




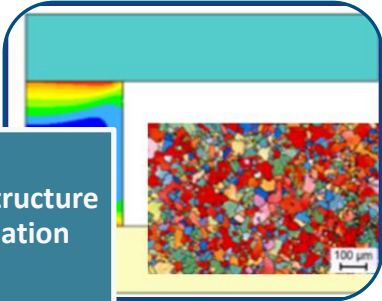
Pre-forged teeth



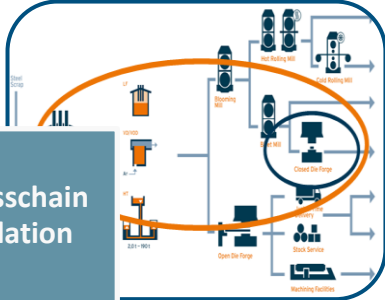
Steering knuckles geometries



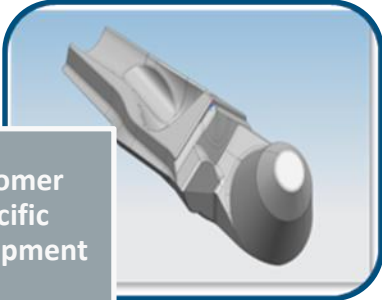
Microstructure simulation



Processchain simulation

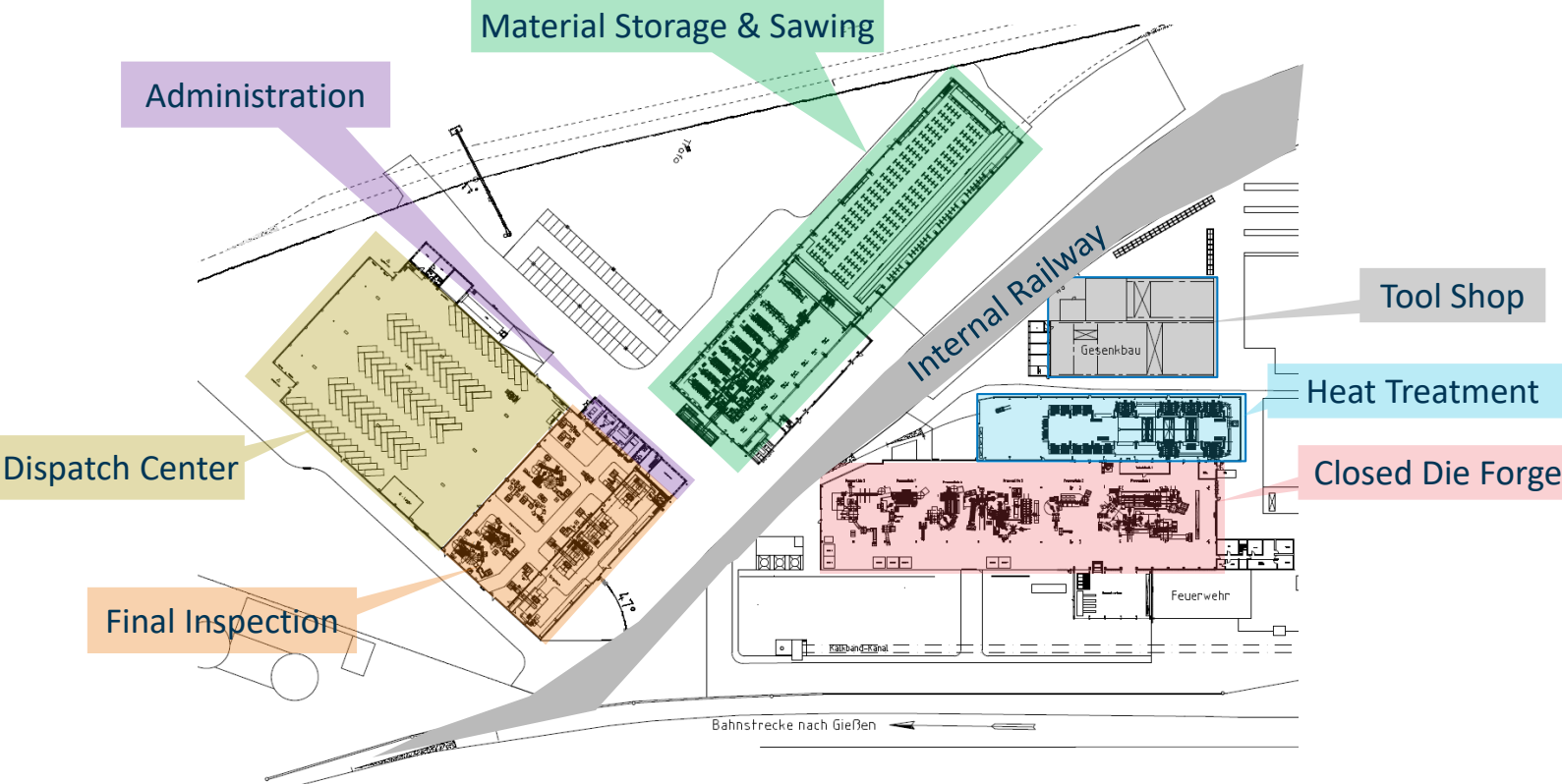


Customer specific development





Our Manufacturing Facility For Your Expectations



Upsetting Press



Main Press



Trimming Press



Robot Palettizing



Cooling Belt



Manufacturing facility – Die forging



Induction heating [to/h]	Upsetting press [to]	Main press [to]	Trimming press [to]	Robot [pcs]	Piece weight [kg]
2	205	2.500	315	1	2 – 10 (5 – 22 lbs)
3,2	500	3.500	500	1	4 – 20 (9 – 44 lbs)
3,2	630	4.500	500	1	6 – 30 (13 – 66 lbs)
3,2	800	6.300	1.000	10	8 – 45 (18 – 100 lbs)
2 x 4,2	1.600	8.000	1.200	9	10 – 80 (22 – 175 lbs)
2 x 3,2	1.200	10.000	1.000	5	20 – 220 (44 – 485 lbs)

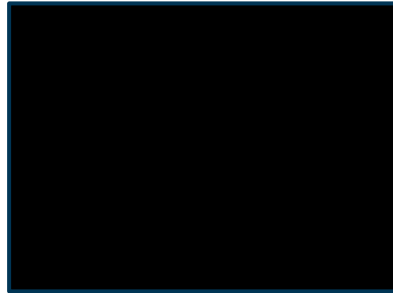
2 press groups (Maxi press) with **63MN** and **80MN** – Piece weight **6 to 80 kg**

2 press groups (Spindle press) with **35MN** and **100MN** – Piece weight **4 to 220 kg**

2 press groups (Chock press) with **25MN** and **45MN** – Piece weight **2 to 30 kg**

Three press groups (**63MN**, **80MN** und **100MN**) are **fully automated**

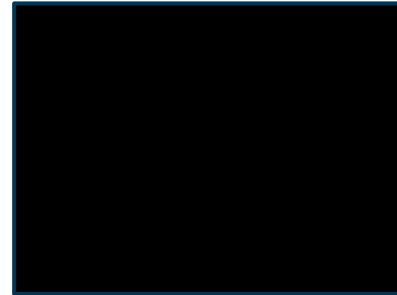
All press groups include facilities for **induction heating**



Maxi press



Spindle press



Chock press

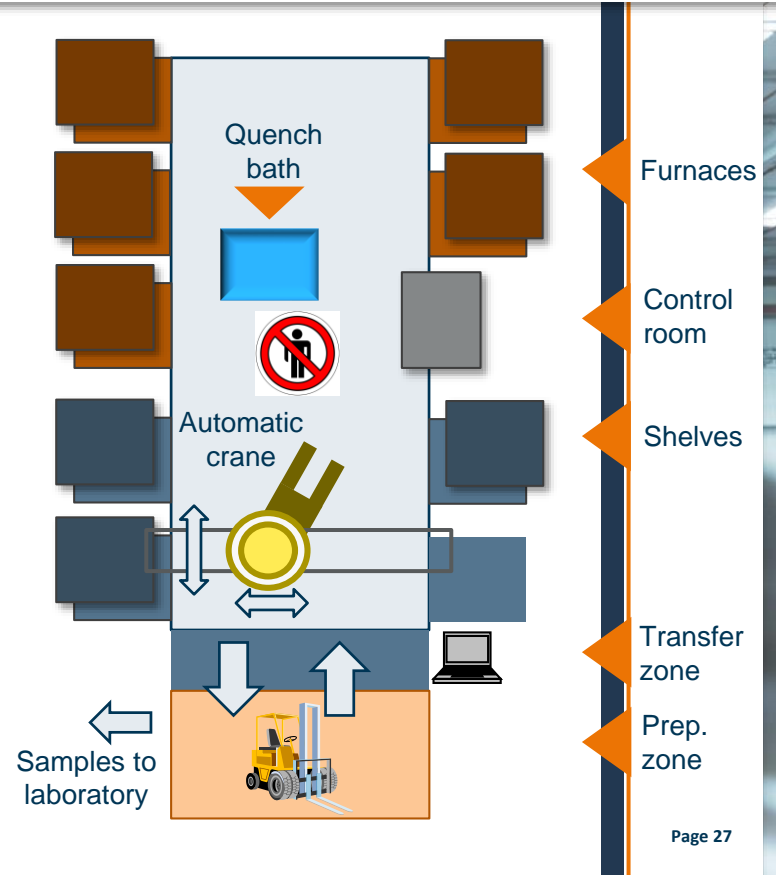
- Automated (handling-) process
- Individual, automatic cycles for each product
- Capacity: **100 tons/day**
- 5 high temperature and 5 low temperature furnaces
- Gas-fired ovens for low emissions
- ERP (SAP) link
- Process monitoring / data logging

Processes:

- Annealing **+FP**
- Normalising **+N**
- Quenching/tempering **+QT** with Polymer bath

Further Heat treatment options:

- Buderus continuous furnace
- External Partners



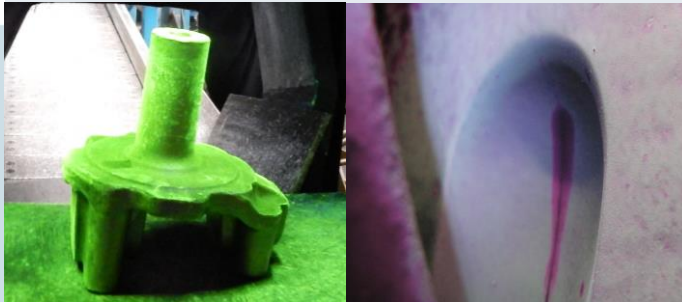
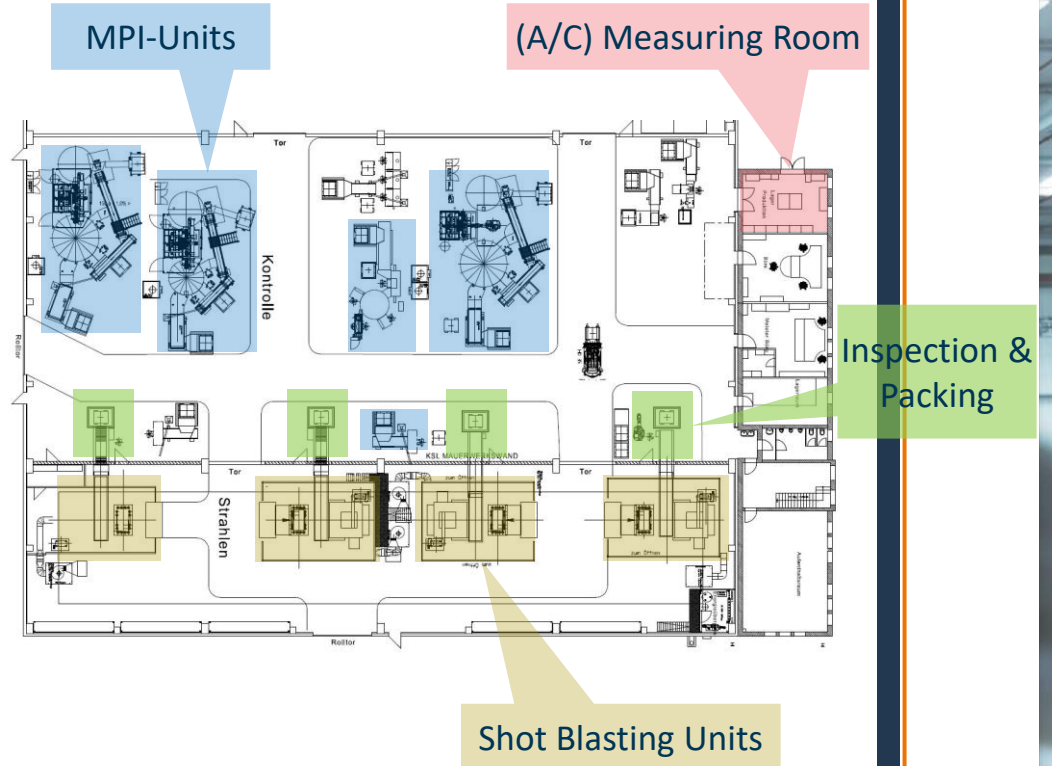
Unloading the high temperature furnace



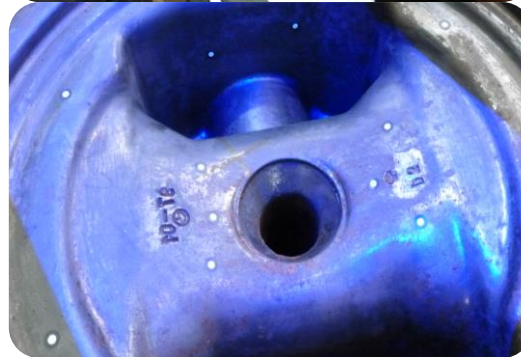
Unloading the low temperature furnace



- 4 shot blasting units
- 3 partly automated & 2 manual units for magnetic particle inspection
- Air-conditioned measuring room
- PPAP defined inspection sequence
- Spectroscopic inspection
- Penetration testing
- Ultrasonic testing
- Dimensional & profile form inspection

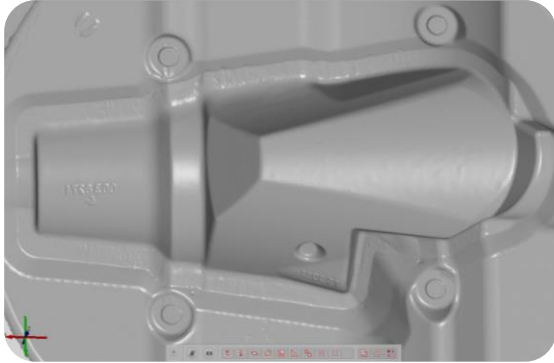
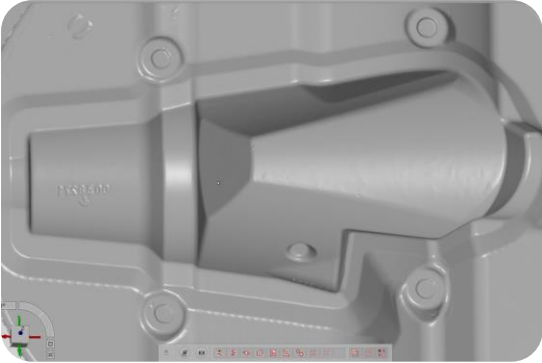


- 10 tool sets/ day
- Production & refurbishment
- CNC-milling
- CNC-turning
- Welding & hard facing
- Optical measurement with 3D scanner
- > 2.000 dies on stock

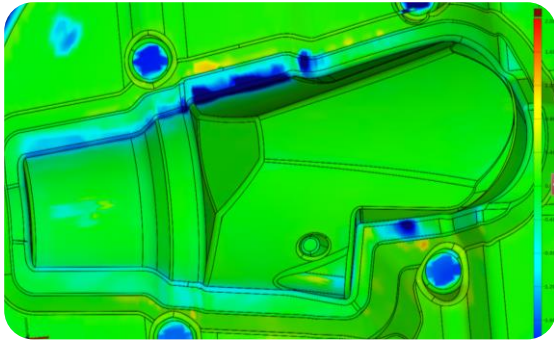
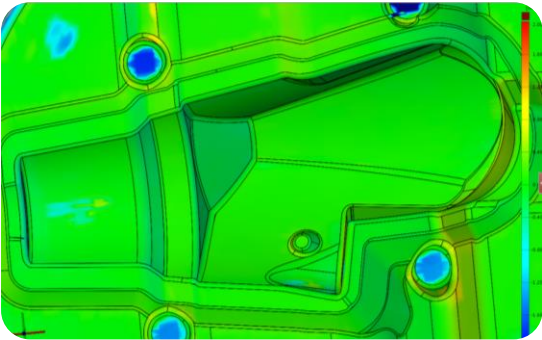


3D - optical die inspection

New Die



After 1000 pcs.





Our Sectors & Your Products





Commercial Vehicle Industry



Mining



Oil and Gas



General Engineering



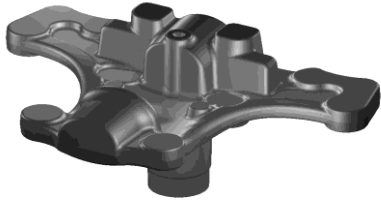
Agricultural Machinery

We work with our customers in order to develop unique closed-die forgings in a weight range from **2.0** to **200.0 kg**.



Commercial Vehicle Industry





Steering knuckle

Component weight: 16-50 kg



Drive shafts

Component weight: 25-55 kg

Component length: 550-745 mm



Crown gear with welded housing

Component weight: 77-80 kg

Component diameter: 440 – 450 mm



Steering knuckle support

Component weight: 50-55 kg

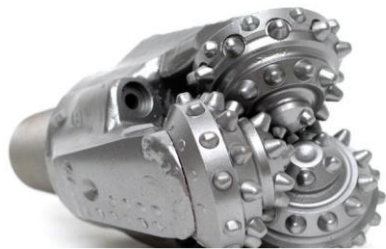


Driving pinion & Crown gear

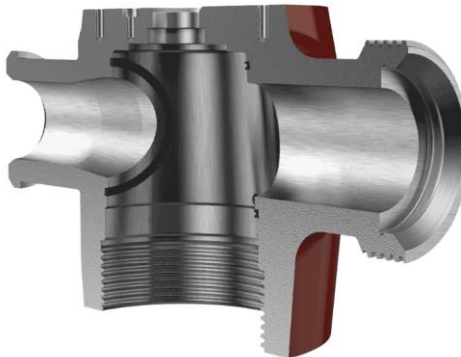
Component weight (pinion): 44 - 50 kg

Component weight (gear): 25 - 75 kg

The geometrie has to be regarded individually for every single case.



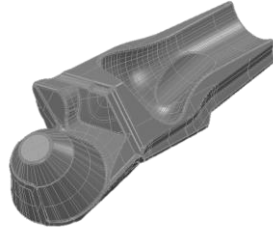
Mining/Oil & Gas





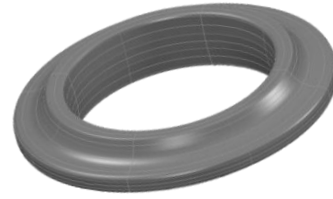
Pocket

Component weight: 14,5 kg
Component length: 589 mm



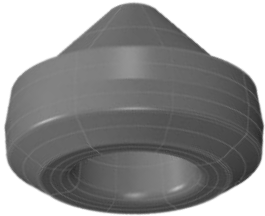
Leg

Component weight: 30 kg



Cutter ring

Component weight: 50 kg
Component diameter: 486 mm



Cone

Component weight: 24 kg



Plug valve 4"

Component weight: 30,9 kg
Component diameter: 176 mm

The geometry has to be regarded individually for every single case.



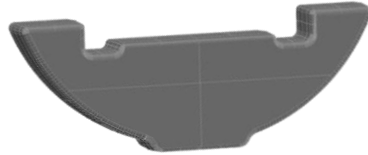
General Engineering





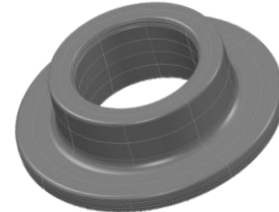
Pressure accumulator

Component weight: 6,2 kg



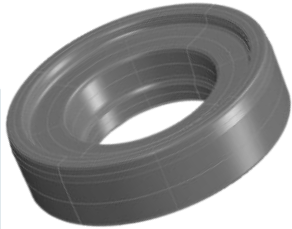
Counterweight

Component weight: 8,6 kg



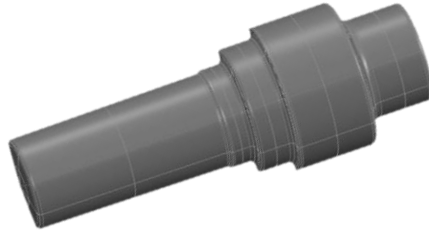
Inner ring

Component weight: 18,2 kg
Component diameter: 298 mm



Outer ring

Component weight: 38,4 kg
Component diameter: 331 mm



Shaft

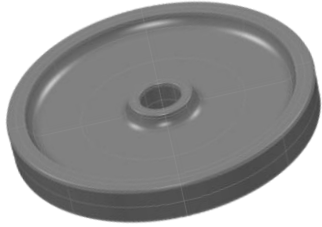
Component weight: 25 kg
Component diameter: 385 mm

The geometrie has to be regarded individually for every single case.



Agricultural Machinery





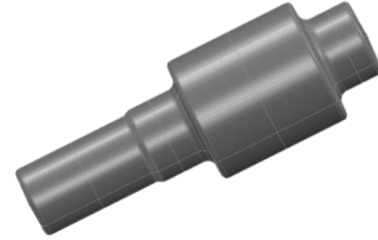
Gearwheel

Component weight: 69 kg
Component diameter: 580 mm



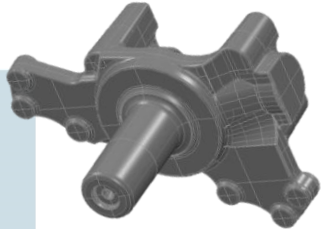
Support bracket

Component weight: 2,3 kg



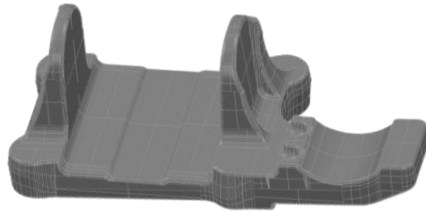
Shaft

Component weight: 5,4 kg
Component length: 232 mm



Steering knuckle

Component weight: 30 kg



Bearing bracket

Component weight: 8,5 kg

The geometrie has to be regarded individually for every single case.



Our Quality Commitment

The Buderus Edelstahl GmbH integrated management system is certified in accordance with ISO 9001, ISO-TS 16949 and ISO 14001.

Each production step is checked precisely and documented in a clear way

Our in-house testing laboratory is certified by "Deutsche Akkreditierungsstelle GmbH (DAkkS)" in accordance with DIN EN ISO/IEC 17025.



ISO/TS 16949



ISO/TS 9001



ISO 14001/50001



DB Bahnzulassung



TÜV Druckbehälter 97 / 23 / EC



OHSAS- Certificate



AEOF- Certificate





Our Successes And Awards

Customs AEO-F Certificate



DAF - 0 ppm AWARD (4th. award in a row announced)



John Deere - Partner Status third time in a row

0 ppm third year in a row



Beinbauer – Supplieraward for 2014/2015



HERRENKNECHT - Supplieraward for 20 years cooperation (October 2016)





Thank You For Your Attention.