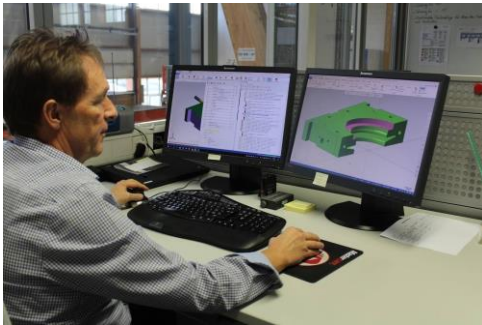


Aartech GmbH – Swiss Manufacturing Experts

Service & Equipment overview



Engineering

- Manufacturing consulting
- Mechanical / sheet metal Design
- Development of electromechanical systems
- Jigs & Tools Design
- Prototyping (Incl. SLM / 3D Printing)



Machining

- Casting and forging parts, rings and plates
- 5-Axis milling parts
- CNC turning parts
- Flat- and round grinding
- 2D/3D Dim check (CMM / Laser Scan)



Sheet metal manufacturing

- Laser cutting
- CNC punching
- Automatic die punching
- Laser- punching
- Robot welding



Systems & Assemblies

- Mechanical assembly up to 8 meters
- Electrical Device assembly
- Hydraulics & Pneumatics
- Functional tests

Engineering, Assembly, Quality Assurance and logistics

Engineering / work preparation / programming and data exchange

| System | Software | File Exchange formats |
|-------------------------------------|---|--|
| CAD | Solidworks, SPI Sheet Metal Editor | Step, dxf (iges, ipt, idw, iam, sat, prt, asm) |
| CAM | Mastercam X4 | Step, dxf, stl usw |
| NC Punching – and Laser programming | Tru Tops Boost (Laser, Punch, Bend) | |
| ERP System | Pro Alpha | |
| Advanced Planning System (APS) | Pro Alpha | |
| EDI | Customer Platforms (SAP Ariba, ASCC, Pool4Tool) | Electronic data exchange |

Quality assurance and logistics

| Process | Machine | Dimensions | Additional Information |
|--------------------------------------|--------------------------|-----------------------------|-------------------------------|
| 3-D measuring machine | Zeiss Prismo MP5 | 900x1800x650 mm | air conditioned, 500 kg crane |
| 2-D Plus measuring machine | Virtek Laser QC | 1500x1500 mm | air conditioned, 500 kg crane |
| Height measuring instruments | Tesa Microhite (several) | up to 850 mm | |
| Hall cranes | several | up to 2 tons | |
| Automated sheet metal storage system | Stopa | Plates up to 1'500x3'000 mm | 300 boxes |
| Heavy load shifting shelf system | Schäfer PR 600 | 300 pallet spaces | Warehouse Management System |
| Packaging / commissioning | several | unlimited | on site packager available |

Assembly

| Process | Anlage | Dimensions | Additional Information |
|--|-------------------------|--------------------|--|
| Large systems assemblies | Flexible assembly zone | 100 m ² | |
| Medical systems assemblies (dust free) | dust free assembly room | 60 m ² | e.g. for electromechanical and medical systems |

Machining, Jigs & tooling's manufacturing

Machining

| Process | Machine | Dimensions | Additional Equipment |
|------------------------------------|----------------------|------------------------------|--|
| 5- Axis milling (HSC simultaneous) | Reiden RX10 | 1000x1100x810 mm | 5-fold pallet exchange system |
| 4-Axis milling | DMU 100 monoBLOCK® | 1250x710x710 mm | NC-controlled swivel milling head NC dividing attachment: Height 220 mm |
| CNC turning | Okuma LB45 | bis Ø 890 und Length 2000 mm | With driven tools and Y-axis |
| CNC turning | Gildemeister NEF 400 | bis Ø 385 und Length 800 mm | With driven tools |
| Conventional turning | Reiden R20 2 | | |

Grinding

| Process | Machine | Dimensions | Additional Equipment |
|------------------------|----------------------|------------------------|----------------------|
| EDM drilling machine | Charmilles Drill 11 | 300x200x300 mm | |
| Round grinding machine | Kellenberger URF 320 | Ø630 and length 450 mm | |
| Round grinding machine | Studer RHU400125C | Ø240 and length 400 mm | |
| Flat grinding machine | Elb Perfekt BD12 | 1200x600x400 mm | |
| Flat grinding machine | Blohm Simplex 5 | 600x300x250 mm | |

Assembly and Service

| Process | Machine | Dimensions | Additional Equipment |
|-----------------------------------|-----------------------|-----------------|----------------------|
| 2-Axis milling / drilling Fehlman | PICOMAX P 100 CNC 3 | 1000x420x500 mm | |
| Band hacksaw | Petrazzi SN 360 | up to Ø 360 mm | |
| Band saw | Mössner Rekord | 785x500 mm | |
| Surface finishing | Micro-Glass pearls | | |
| Engraving | Graphograph IS 400 | 305x210 mm | |
| Pressure / Tightness Tests | Hydraulic test device | up to 60 bar | Medium: water |

Sheet metal manufacturing

Flat metal processing / Laser cutting and punching

| Process | Machine | Dimensions | Materials |
|-----------------------------------|---|--------------|--|
| CNC Flatbed laser with Liftmaster | Trumpf TC L-3030 Laser Power: TLF 5000 Turbo | 1500x3000 mm | Steel 25 mm / CrNi 20 mm / Alu 12 mm |
| CNC punching / Laser | Trumpf TC 6000L Laser Power: 2700 W Press force: 22 t | 1250x2500 mm | Steel bis 8 mm / CrNi 6 mm / Alu 4 mm |
| Punching automat | Weingarten Press force: 60 t | | Steel bis 3 mm / CrNi bis 3 mm / Alu bis 3 mm Kupfer bis 3 mm |
| Hydraulic press | Laufer / Müller Press Force: 40t | | Steel bis 6 mm / CrNi bis 4 mm / Alu bis 6 mm Kupfer bis 3 mm |

Metal levelling

| Process | Machine | Dimensions | Material thickness |
|---------------|----------|--|-------------------------|
| Plan rolling | Schubert | Width max. 600 mm Length min. 50 mm | min. 0.5 mm / max. 8 mm |
| Plan rolling | Schubert | Width max. 150mm | max. 3 mm |
| Round rolling | Auerbach | Width max. 100 mm | max. 15 mm |
| Round rolling | Diverse | Width max. 1800 mm | |

CNC bending / forming

| Process | Machine | Dimensions | Material thickness |
|-------------------------|--------------------------------------|------------|--------------------|
| CNC bending with sensor | Trumabend 5230 Press force: 230 t | 3200 mm | |
| CNC bending with sensor | Trumabend V230 Press force: 230 t | 3000 mm | |
| NC bending | Promecam Press force: 50 t | 2000 mm | |
| Forming | Laufer / Müller Press Force: 40t | several | |

Welding technology

| Process | Machine | Dimensions | Additional Equipment |
|------------------------------|---------------------------------------|------------------------------------|---|
| Robot welding MIG/MAG & CMT | ABB FlexArc 250R | Length : 1200 mm Width: 1000 mm | Steel, Cr-Ni, Alu |
| Linear welding | Kemppi Pro Evolution | Length: 1000 mm Width: several | Steel, Cr-Ni, Alu |
| Hand spot welding | Nimak L193T Press force max. 6 bar | Reach: 500 mm | Steel up to 4 mm / Cr Ni bis 3 mm |
| Spot welding machine | PMP 11 / 80 - 200 kVA | 3000x1050 mm | Steel up to 6 mm / CrNi bis 3 mm / Alu 3 mm |
| Additional manual Processes: | TIG, MIG / MAG, | | Construction steel / CrNi alloys, Aluminium |

Heat and surface treatment technologies

Heat treatment

| Process | Machine | Max. Batch dimension | Additional Equipment |
|---|-------------------|-----------------------|---|
| Gas nitriding / nitro carburizing Protective gas annealing | Rhode | Ø 1000x1500 mm | Nitriding sensor to ensure the nitriding quality |
| Aluminium tempering | Nabertherm | Ø 1200x700 mm | Quench tank with 11 m ³ volume and circulation |
| Quenching, hardening, Carbo-nitriding, tempering under protection atmosphere, Oxi - nitriding | Codere | Ø 700x1000 mm Length | Oil bath |
| Annealing, hardening and brazing under vacuum | High Vacuum ovens | up to 1200x800x600 mm | |
| Atmospheric glowing | Nabertherm | 2500x2500x1300 mm | |

Surface treatment technologies

| Process | Machine | Dimensions | Remarks |
|--|---|--|----------|
| Rotary brush machine with wide belt grinding unit | Grindingmaster Typ 1350-WRB | Width max. 1300 mm Thickness max. 40 mm | Type dry |
| Flat grinding machine Plannishing / finishing units (Bell and dryer) | Niederberger TT25 / TT90 Circlon CL505 / CV55 | Width max. 150 mm | |
| Plannishing | Length vibration V150 | Width max. 200 mm Length max. 1000 mm | |
| Galvanic / Painting / Laser engraving | Aartech Supply chain | Length max. 2'000 mm | |
| Glass / sand pearl surface finishing | IEPCO | | |

Material testing lab

| Process | Machine | Dimensions | Additional Information |
|-------------------------------|---|--------------------------|---|
| Roughness test | Hommel Tester | | Ra und Rz measurements |
| Hardness tests | Brinell, Rockwell und Vickers, Equotip | up to 800 mm height | DIN EN 6506-1, DIN EN 6507-1, DIN EN 6508-1 |
| Tensile tests | up to 150 kN | Probe holder Ø 4 - 30 mm | DIN EN 50125:2009 und DIN EN ISO 6892-1:2009-12 |
| Electrical conductivity tests | | | All common Non ferric alloys |
| Spectral analysis | Spectrotest Metal Analysis | Mobile Version | All common metal alloys |
| Metallographic- tests | Keyence | Grinding probe | All common metal alloys |
| Crack inspection test | Fish & Partner | 1000x700x600 mm | Fluorescent crack detecting |

Material Experience

| Korrosionsbeständige Stähle [Corrosion resistant steels] | Baustähle [structural steels] | Nickel-Basislegierungen [Nickel-based alloys] | Titan / Aluminium |
|---|----------------------------------|--|-------------------|
| 1.4301 | 1.0038 | 2.4602 | 3.7164 |
| 1.4306 | 1.0570 | 2.4856 | 3.7165 |
| 1.4404 | 1.1133 | 2.4951 | 3.3547 |
| 1.4310 | 1.1191 | 2.4851 | 3.3535 |
| 1.4713 | 1.0330 | 2.4967 | 3.3315 |
| 1.4944 | 1.0332 | 2.4733 | 3.2315 |
| 1.4962 | 1.0980 | 1.4923 | |
| 1.5919 | 1.0398 | 1.7709 | |
| 1.5415 | 1.0347 | 1.7380 | |
| 1.4541 | 1.0226 | | |

| Sonderwerkstoffe (BBC) [special BBC alloys] | Metallguss [molding] | Kunststoffe [synthetic materials] |
|--|--------------------------------|--------------------------------------|
| St 11T | EN-GJL (GG) | Polyoxymethylene (POM) |
| ST 12T / St 12 TS | EN-GJS (GGG) | Polyetheretherketon (PEEK) |
| St 18/8 | Stahlguss [steel castings] | Polymethylmethacrylat (PMMA) |
| St 17/13W | Aluminiumguss [cast aluminium] | Thermoformed parts |
| St 525 | | Polyurethane moulded parts |
| St 575 | | |
| ST 530 TS | | |
| St 330 | | |
| ST460 TS | | |
| Vacoflux 50 | | |

Certifications

| Certification | Description | Additional information |
|-----------------|---|------------------------|
| ISO 9001:2015 | Quality Management System | Ongoing |
| ISO 3834-2:2005 | Quality requirements for fusion welding of metallic materials - Part 2: Comprehensive quality requirements | Ongoing |

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