



COMPANY PRESENTATION

*THE GROUP OF COMPANIES REICHENBACHER-HAMUEL
WITHIN THE SCHERDELGROUP*

CONTENTS

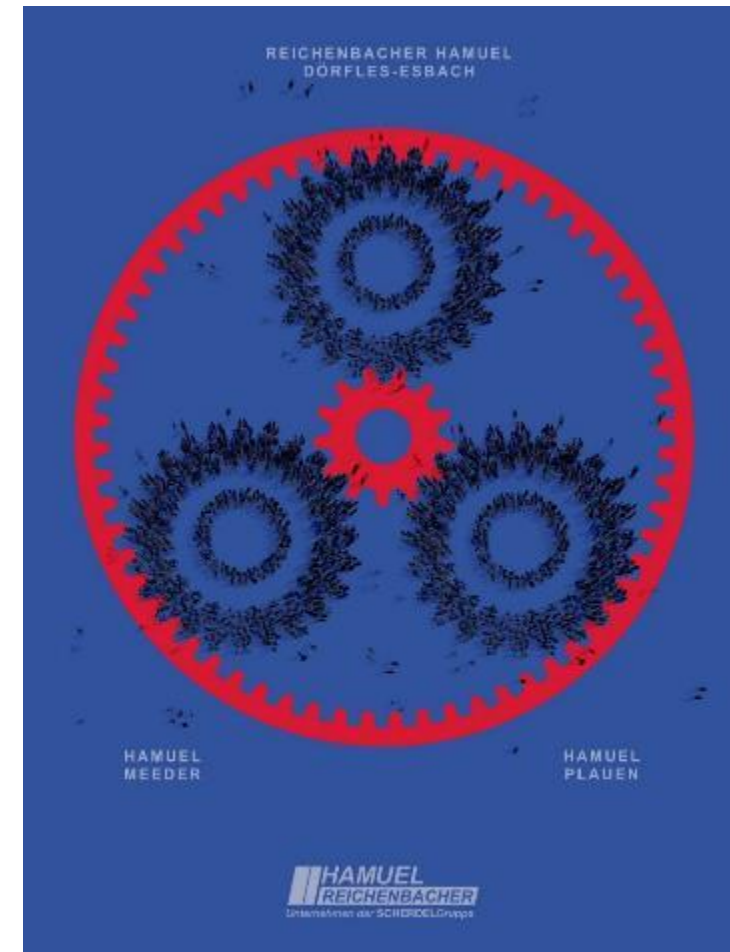
SCHERDEL

REICHENBACHER DÖRFLES-ESBACH

HAMUEL PLAUEN

HAMUEL MEEDER

QUALITY & SERVICE



SCHERDEL

AT A GLANCE

SCHERDEL is a fast-growing independent family business with more than 125 years of tradition (1890 – 2015) in the production of technical springs.

SCHERDEL stands for innovative solutions based on wire, tube and strip forming.

SCHERDEL offers early and extensive research and development services and is a supplier for OEMs und system manufacturers.

SCHERDEL offers a comprehensive portfolio of forming techniques, joining and assembly technology, via mechanical engineering and tool making, up to surface technology.

SCHERDEL is represented internationally with production sites in eleven countries on three continents.

SCHERDEL has about 6,000 employees in 42 producer plants.

GERMANY:

Berlin,
Chemnitz,
Coburg,
Erlangen,
Marienberg,
Marktrewitz,
Plauen,
Röslau,
Seiffennersdorf,
Treuen,
Waldershof,
Zwickau

Europe:

France: l'Arbresie, Beauvais
Portugal: S.J. da Madeira
Russia: Kaluga
Slovakia: Myjava
Czech Republik: Bor

America:

Brasil: Sorocaba
Mexico: Silao
USA: Muskegon

Asia:

China: Anqing, Huzhou
Japan: Nagoya
India: Jaipur

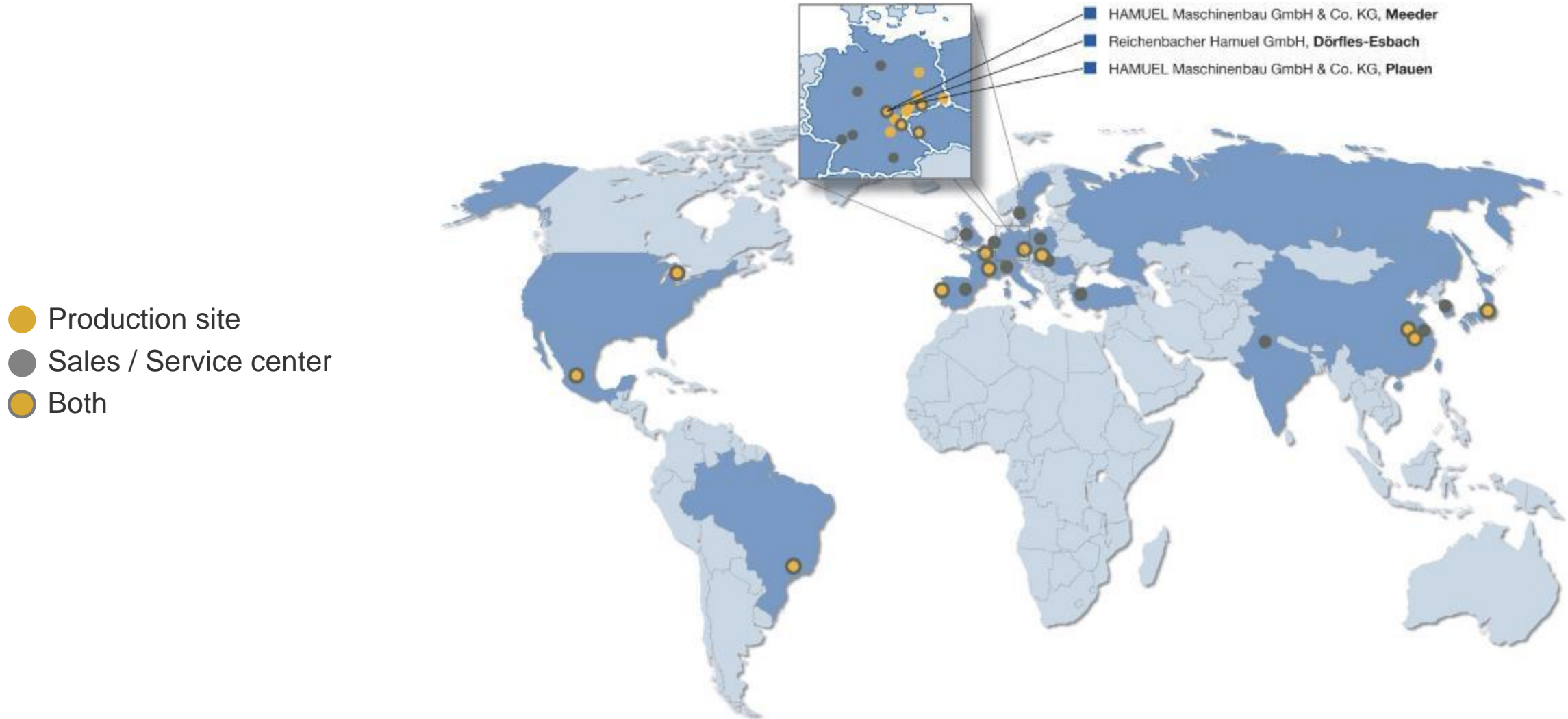


12 
countries

32 
locations

42 
production plants

approx. **6,000** 
employees worldwide



Automotive industry



Competence
Drive motor

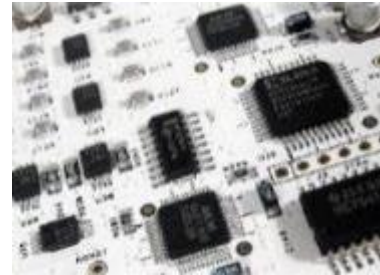


Competence
Body, brakes, chassis

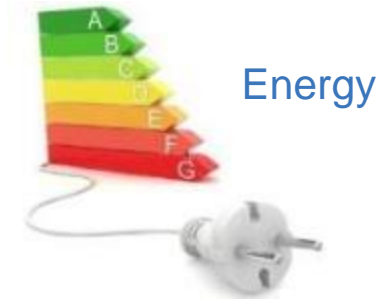


Competence
Car interior **E-mobility**

Electronic industry



Leisure industry

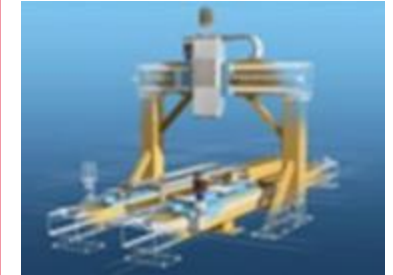


Energy

Medical engineering



Mechanical engineering



THE GROUP OF COMPANIES

REICHENBACHER-HAMUEL

1



**HAMUEL Maschinenbau
GmbH & Co. KG**
Industriestraße 6
D-96484 Meeder

2



**HAMUEL Maschinenbau
Plauen GmbH & Co. KG**
Hans-Sachs-Straße 28
D-08525 Plauen

3



**Reichenbacher Hamuel
GmbH**
Rosenauer Straße 32
D-96487 Dörfles-Esbach

HAMUEL MASCHINENBAU MEEDER

MILLING MACHINES



HSTM 150 S2



HSTM 150 HD



HSTM Serie XL, HD



HSTM 1000 HD Hybrid



HSTM 150 HD Hybrid



HSTM 1500 XL Blik

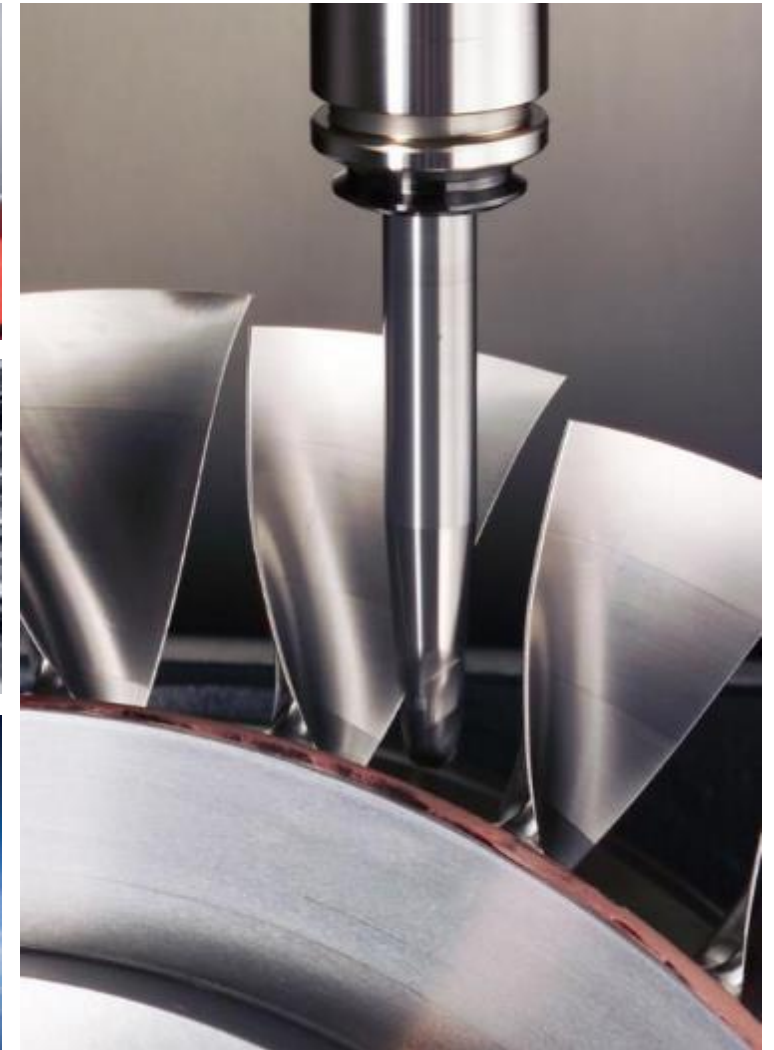
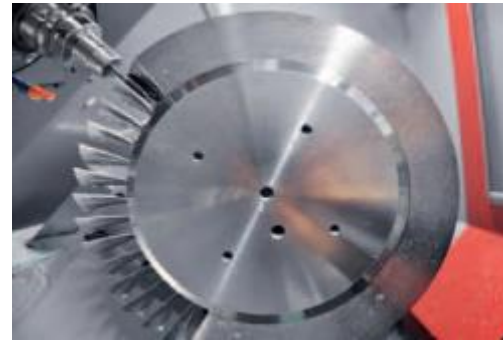
**At present, HSTM-machines are
in use in:**

- China
- Germany
- India
- Croatia
- Mexico
- Austria
- Poland
- Russia
- Switzerland
- UK
- the U.S.A.



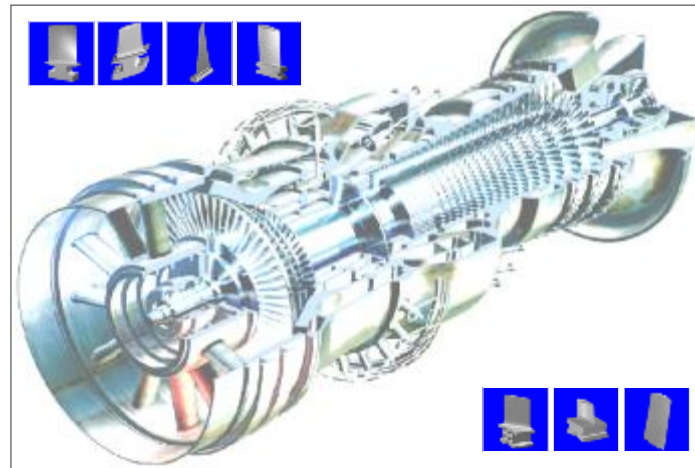
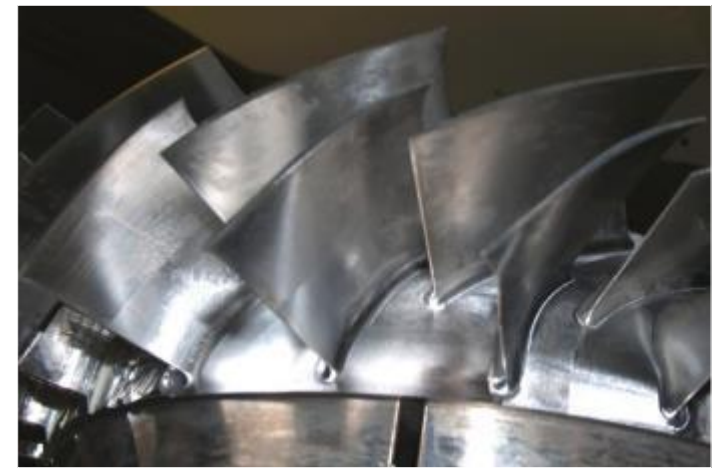
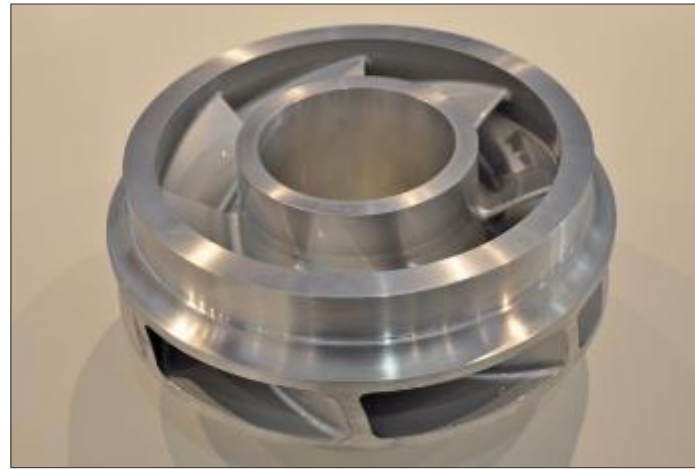
Advantages in machining with a HAMUEL machine:

- Flexibility
- High accuracies
- Cost savings
- Blisk and blade in a single machine
- Blisk-blades accessible for the tool from both sides
- Innovative chip concept
- Space-saving by smaller footprint



MILLING APPLICATION EXAMPLES

HAMUEL MASCHINENBAU GMBH & CO. KG – ADVANCE BY EXPERIENCE



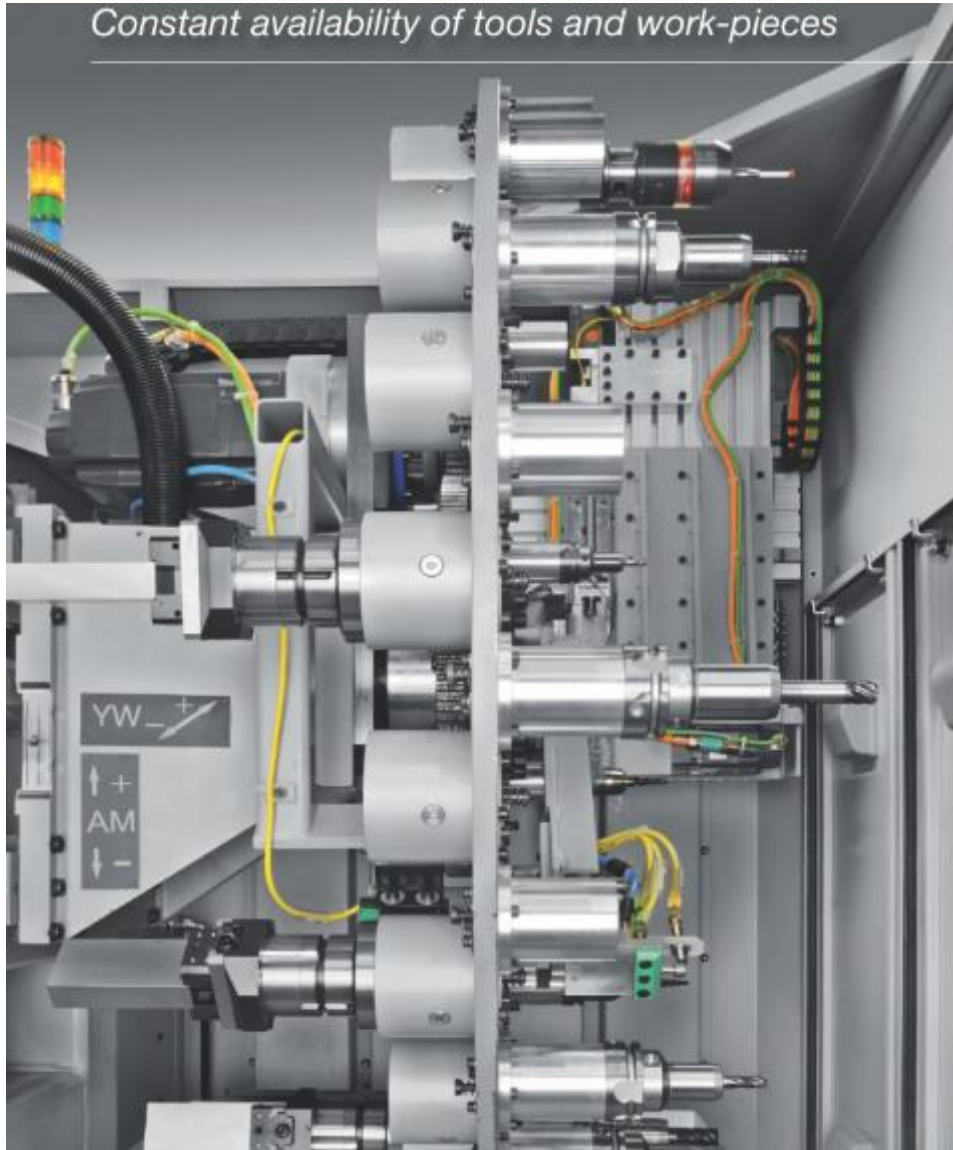
FURTHER PARTS

HAMUEL MASCHINENBAU GMBH & CO. KG – ADVANCE BY EXPERIENCE



AUTOMATION

Constant availability of tools and work-pieces



Utmost process reliability

Tool / work-piece magazine

The magazine is a disc with a standard capacity of 20 tools and 20 work-pieces. The operator can load and unload them while machining is in progress. Here, the safety-interlock of the access opening will be released upon a demand from the operator, while at the same time the access from the machine side to the magazine will be blocked – and vice versa.

Tool changer with double gripper

The patented changer is equipped with a spring-loaded double gripper with the purpose of taking the tools and the work-pieces from the magazine to the milling spindle and back again during primary processing time.

A-axis (Rotary axis for work-piece)

Direct drive (torque motor) free from backlash equipped with direct measuring system. Standard HSK 63 interface for clamping devices and the screw-in fixing with indexing bolt for the correct positioning of the devices.

B-axis (Pivot axis for tool)

The tool axis B is equipped with a direct drive (torque motor) free from backlash and with a direct measuring system.

CNC-control system Siemens 840 D solution line

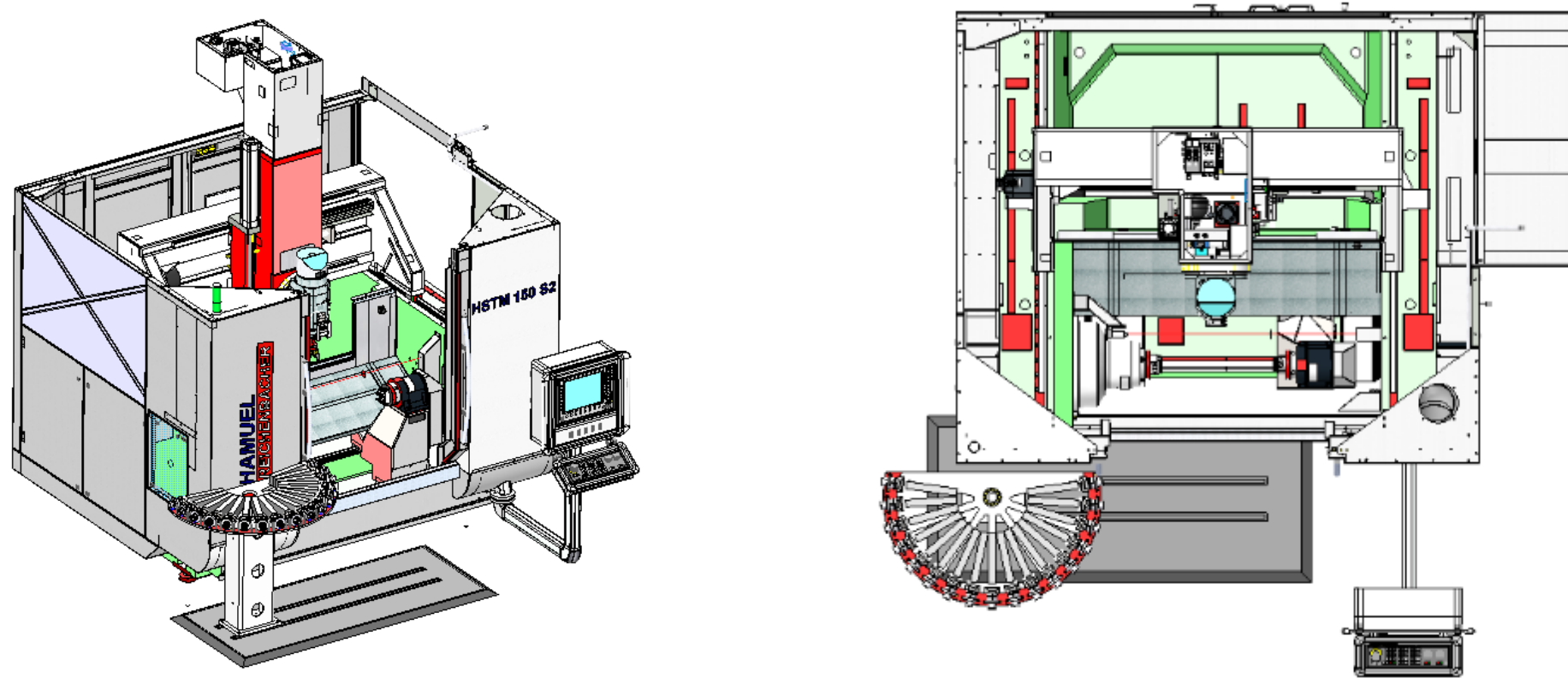
CNC-system with PLC integrated to control all automatic sequences. Design for the simultaneous multi-axes control of the axes X, Y, Z, A, B and of the counter-spindle (C-axis).

Integrated Workpiece Loading System HSTM 150HD

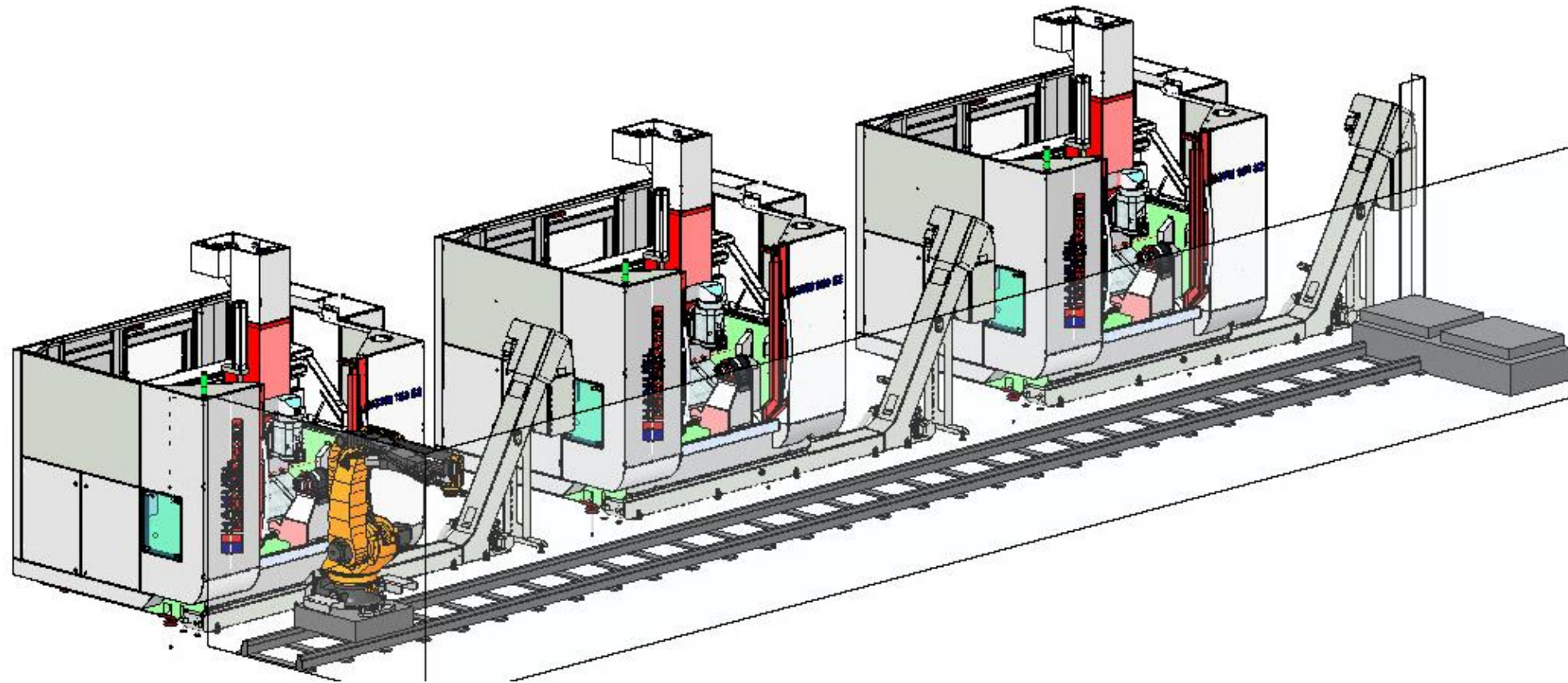




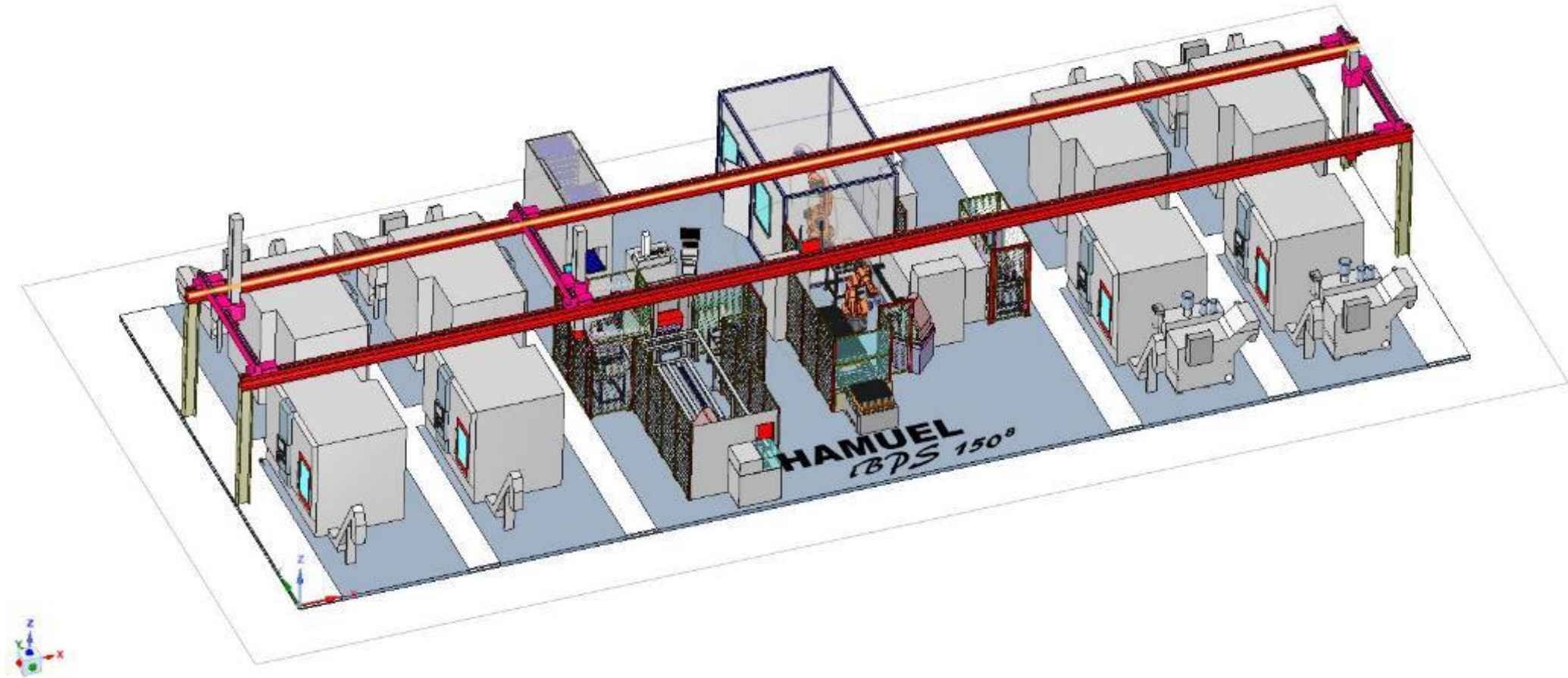
Customized Workpiece Loading System with Chain Magazine



Front Workpiece Loading System with Magazine Disk

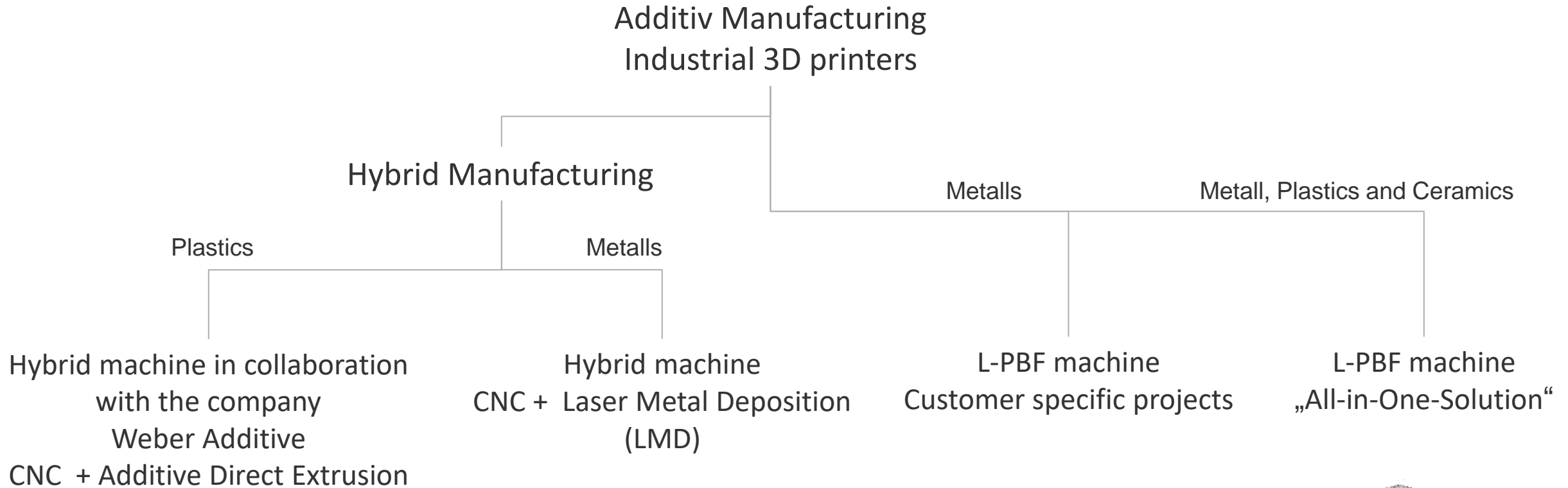


Customized Workpiece Loading System by a 6 Axis Robot



Fully Automated - FMS

ADDITIVE MANUFACTURING



Hybrid machine in collaboration
with the company
Weber Additive
CNC + Additive Direct Extrusion



Hybrid machine
CNC + Laser Metal Deposition
(LMD)



L-PBF machine
Customer specific projects

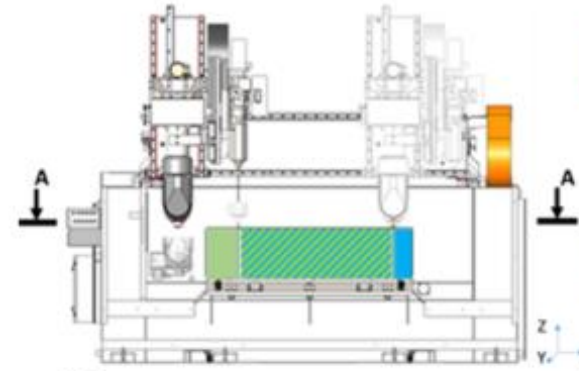
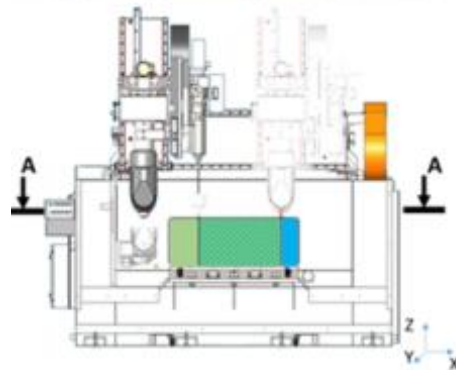
800x800x500 mm



L-PBF machine
„All-in-One-Solution“

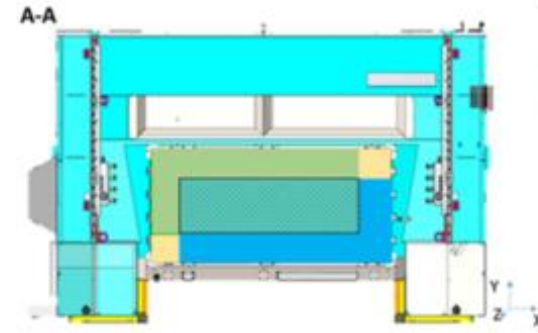
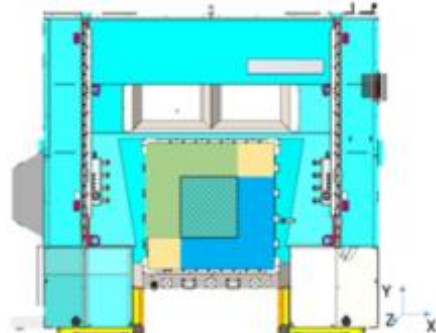
*coming soon

200x200x500 mm
 300x300x500 mm
 400x400x500 mm



A-A

A-A

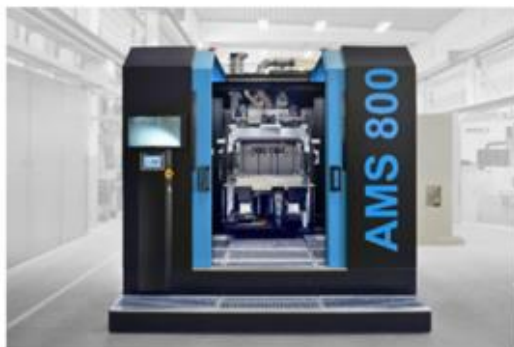
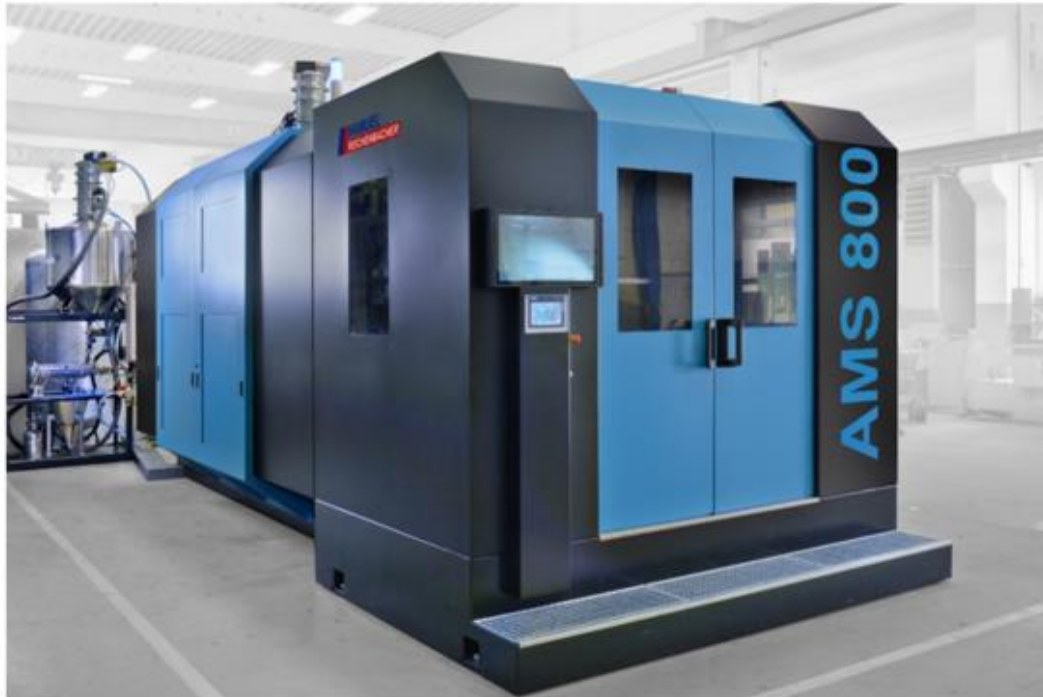


Color	Function	Unit
Blue	Printing	mm
X		735
Y		708
Z		650
Green	Milling	
X		700
Y		750
Z		650
Green with diagonal lines	Printing + Milling	
X		435
Y		458
Z		400*

Color	Function	Unit
Blue	Printing	mm
X		1635
Y		1008
Z		650
Green	Milling	
X		1600
Y		1050
Z		650
Green with diagonal lines	Printing + Milling	
X		1335
Y		758
Z		400*

19.10.2021

7



Specifications

Build volume (XYZ)	800x800x500 mm
Laser power type	4 x 1 kW / Fiber laser
Laser wavelength	1030-1090 nm
Layer thickness	up to 120 µm
Scanning speed	up to 30 m/s
Focus diameter	70-500 µm variable

Space requirements

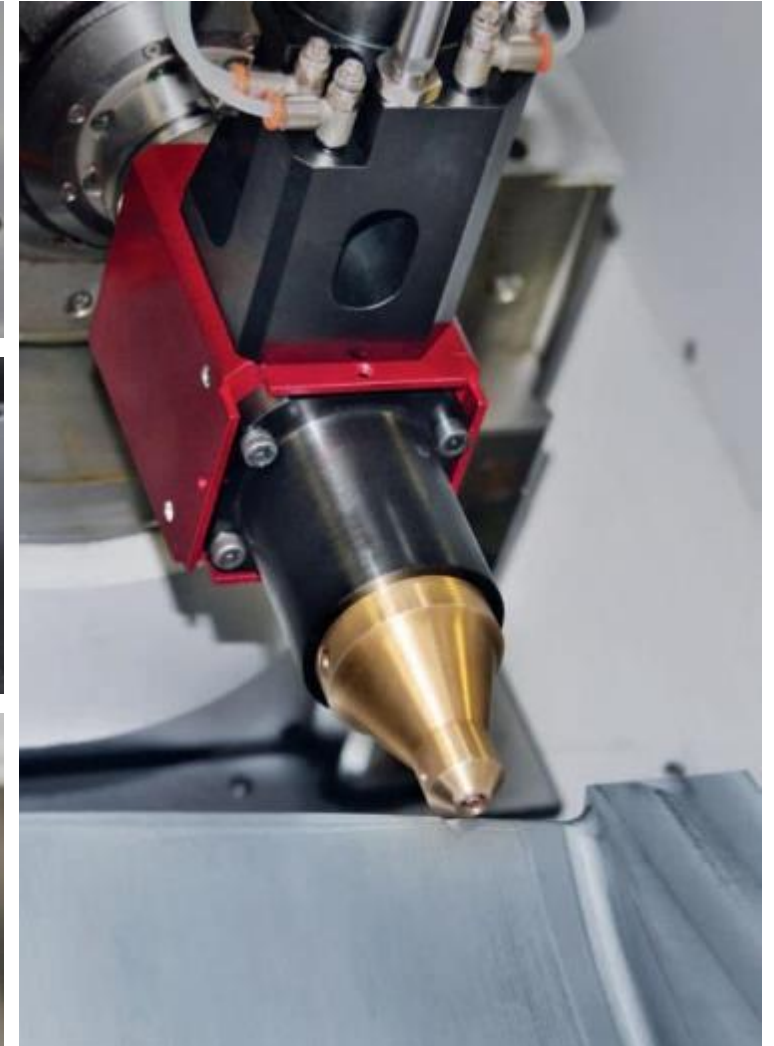
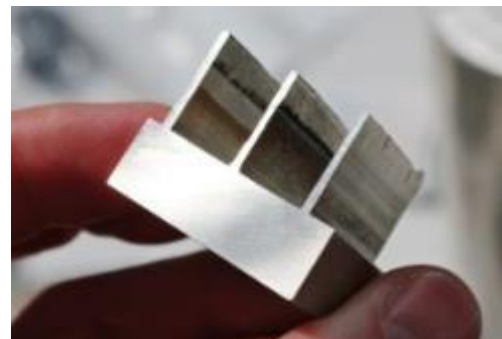
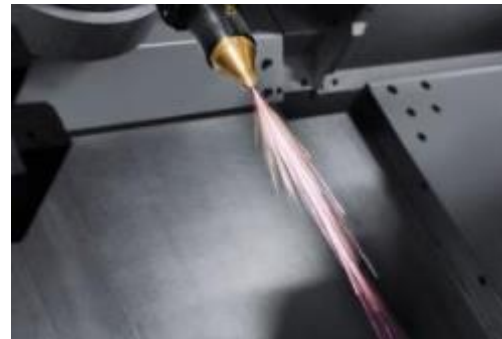
Dimensions (W x D x H)	2840x6100x3411 mm
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Accessories/peripherals

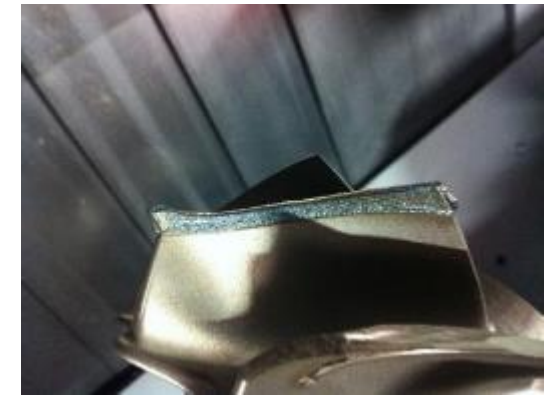
Material	Fe-based alloys
Material loading	semi-automated
Handling	automated
Inert gas supply	N2-generator external
Powder supply	Powder management module
Filtering system	Filter management module
E-Connection/power input	400 Volt 3NPE, 63 A, 50/60 Hz, 7-10 kW

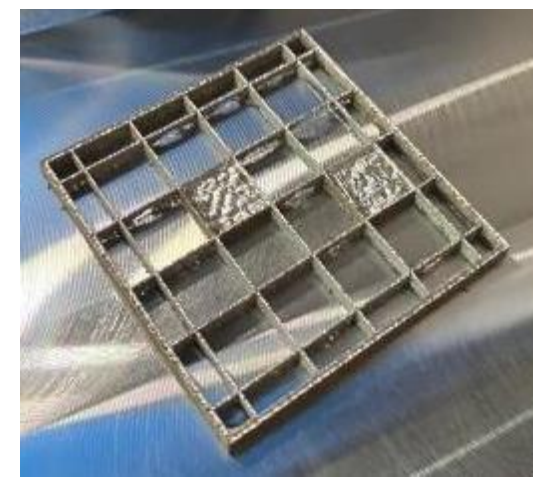
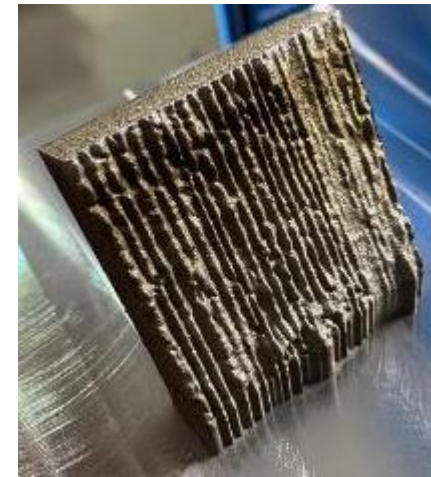
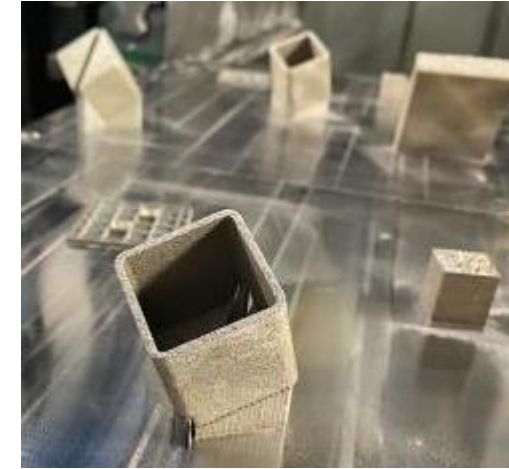
**The combination of various
manufacturing processes in
a single machine:**

- 5-axes HSC-turn-milling
- 3D laser cladding
- 3D scanning
- Deburring and polishing
- Laser marking
- Complete machining in a single clamping operation



Tip repair, as a fully automated solution, including adaptation

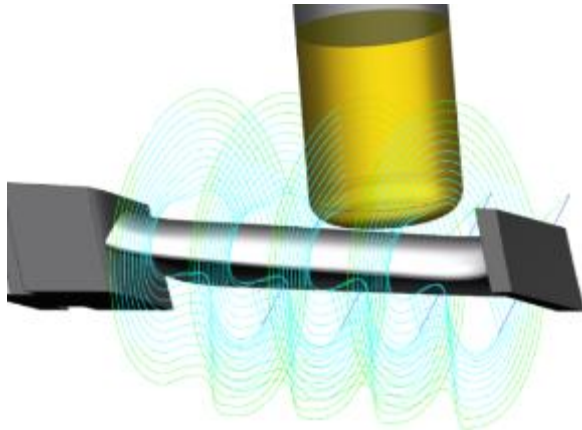




HAMUEL MASCHINENBAU GMBH & CO. KG

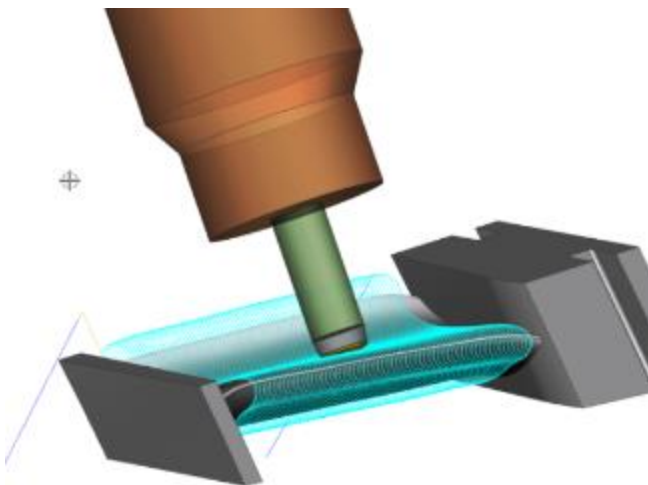
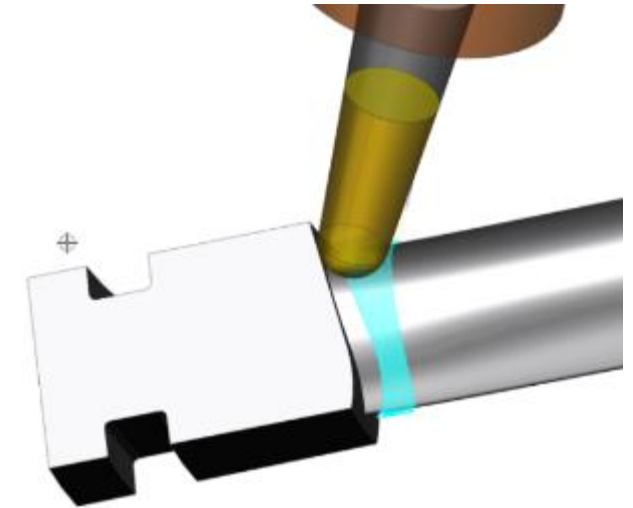
CAD/CAM SOFTWARE

Overview CAM functions



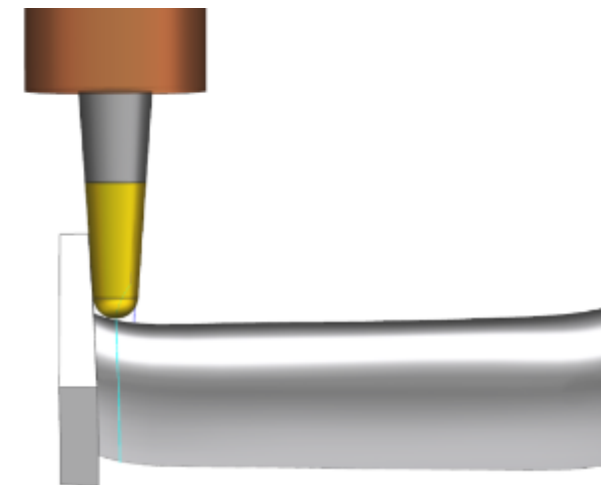
4-Axis
roughing from
blank to profile

4 and 5-Axis
finishing of
the transition



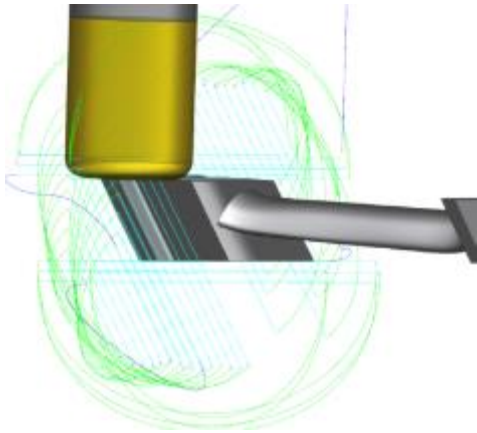
5-Axis
finishing of
the profile

5-Axis flank and
point milling of
the platform



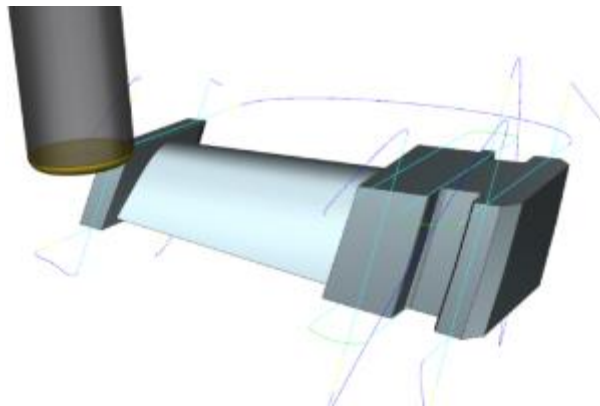
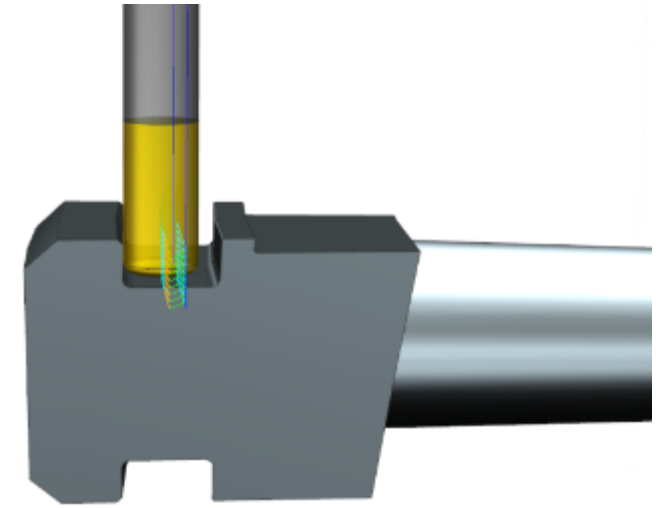
Profile milling operations for roughing and finishing

Overview CAM functions



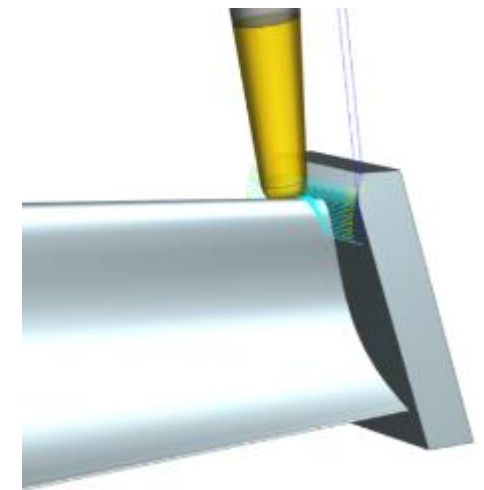
Roughing from blank to profile

Roughing and finishing of slot and cut out geometries



Finishing of the rhombic surfaces

Milling of bellmouth geometries



Root milling operations for roughing and finishing

ASSEMBLY OF BASIC MACHINE UNITS

Advantages:

- Cost-cutting in procurement
- Reduction in manufacturing and assembly depth
- Optimization of logistics processes
- Completion by MineralCast frames from company Sutter
- Welded structures, prototypes, cabin construction, commissioning, etc.
- Everything from one source!



HAMUEL MASCHINENBAU PLAUEN

COMPETENCES

custom-made solutions

laser- and sheet metal forming

flame cutting

welded structures

annealing

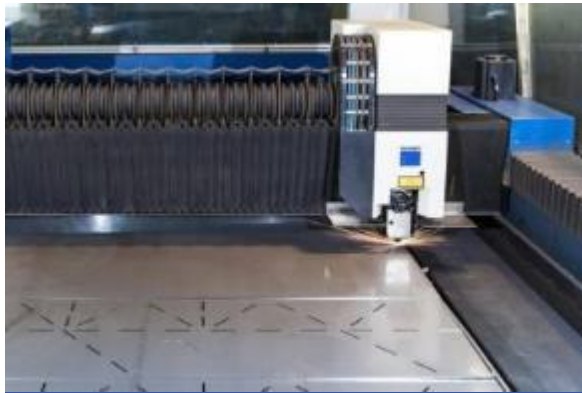
finishing

treatment

non-cutting manufacturing

vibration relief

certification for welding manufacturers



Laser machining



Sheet metal processing



Sheet metal working



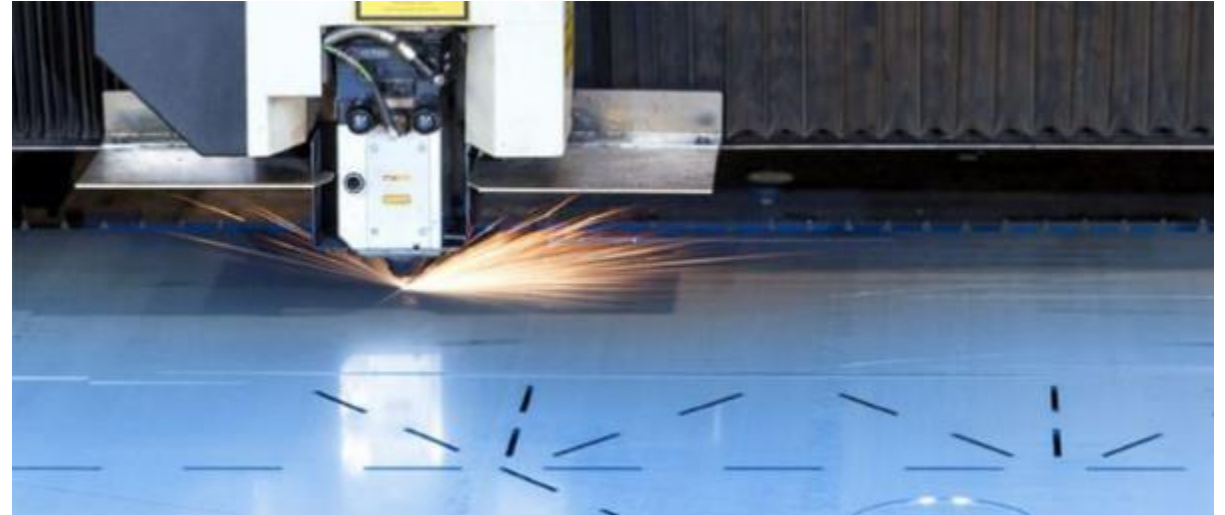
Welded Structures



Finishing

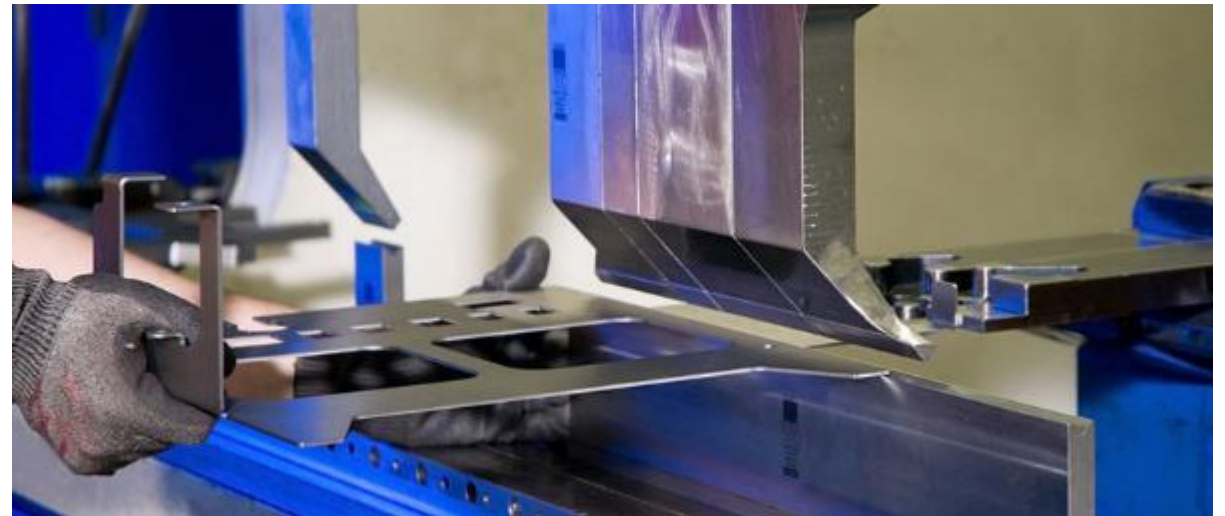
Production parameters:

- Cut per EN ISO 9013 221
- Working area:
4,000 x 2,000 mm
- Sheet metal thickness:
20 mm construction steel
15 mm stainless steel
12 mm aluminum
- Laser source:
TRUMPF CO2-Laser 5.000 W
TRUMPF CO2-Laser 3.000 W



Production parameters:

- Bending parts:
length 4,000 mm
- Sheet metal thickness:
up to 12 mm
- Weight of parts:
from 0.1 kg to 400 kg
- Contract manufacture:
from a batch size of 1

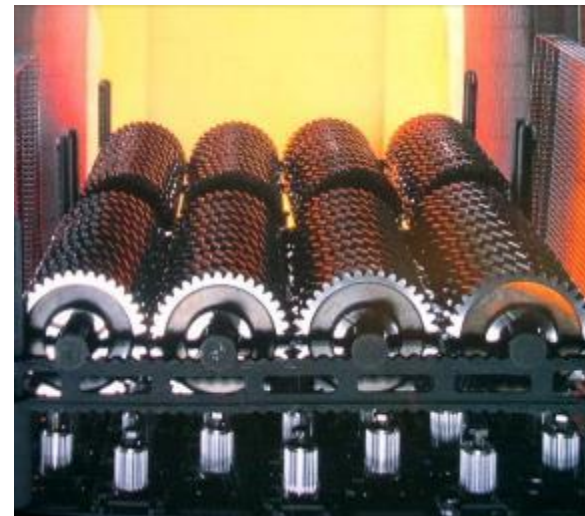




Custom-made solutions for machine construction

Production parameters:

- Shot peening:
up to 10 t; 8 x 3 m
with steel shot
- Priming:
up to 10 t; 12 x 3 m
- Annealing:
up to 10 t; 6,1 x 2,6 x 1,4 m
at 550 °C
- Vibration relief



REICHENBACHER HAMUEL DÖRFLES-ESBACH

highest security standards

special machine construction

wood long life expectancy of the machines

aluminum

plastics

five-axis machining

Intense commitment to innovation

Retrofit

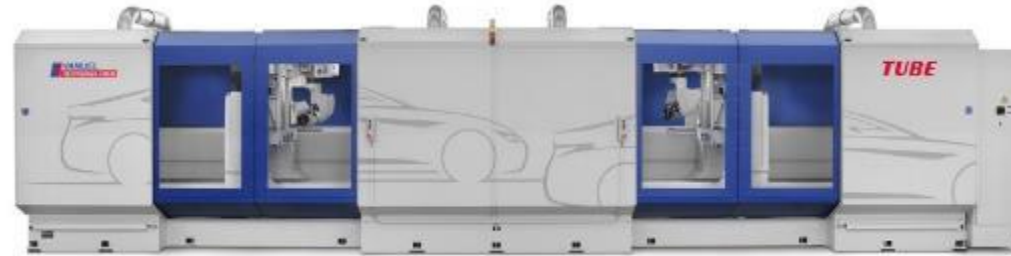
composites

ongoing availability

high load-bearing capacity of the machines



ARTIS-X



TUBE



**VISION / VISION-U / VISION-L /
VISION-ST / VISION-FLEX**



ECO-NT / ECO-LT / ECO-NX



**ECO-RS-I / ECO-RS-II /
ECO-RS-III**



ECO

ALUMINUM MACHINING

REICHENBACHER HAMUEL DÖRFLES-ESBACH

EXAMPLES FROM ALUMINUM MACHINING





Automobile construction

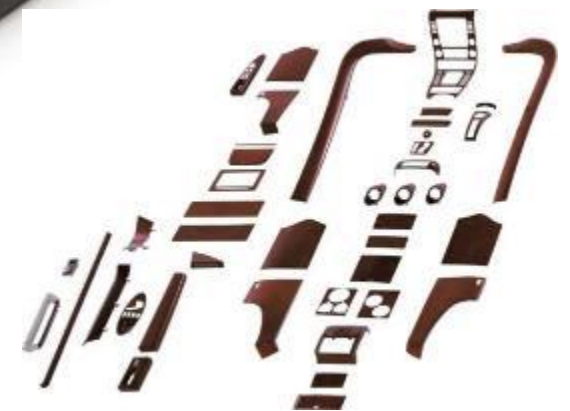
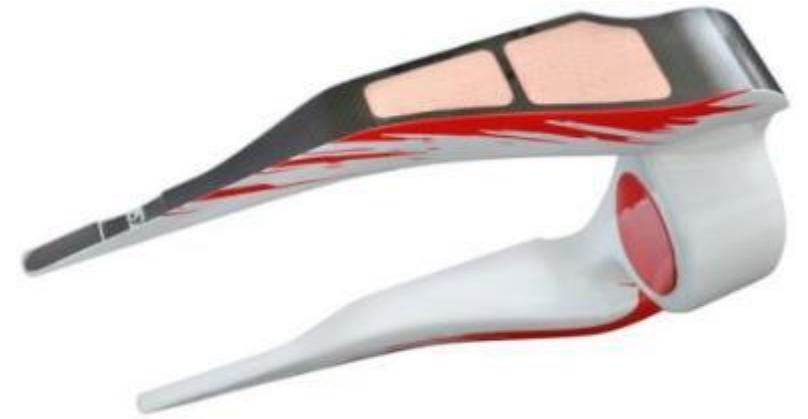
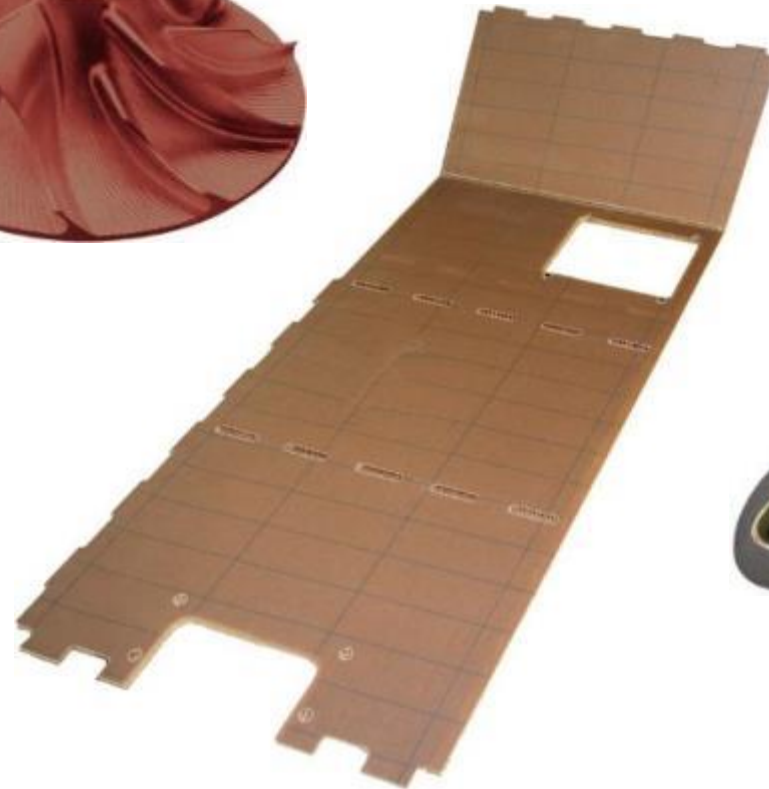
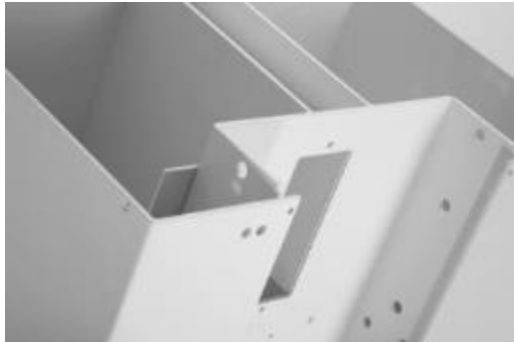


Aircraft construction

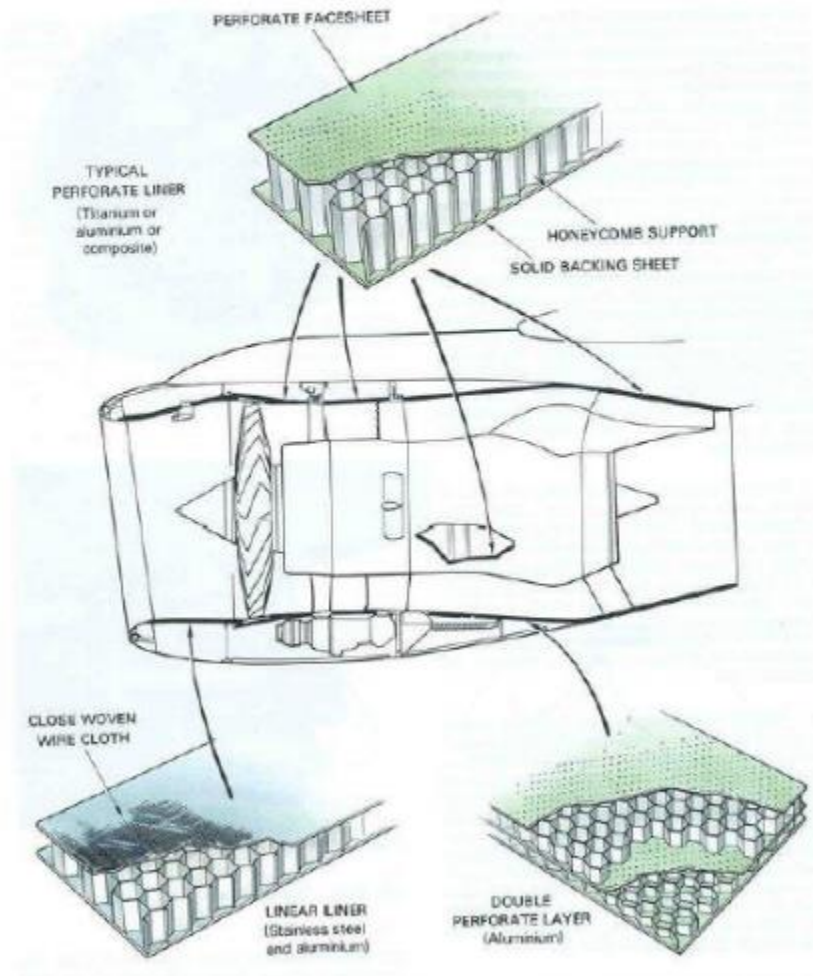


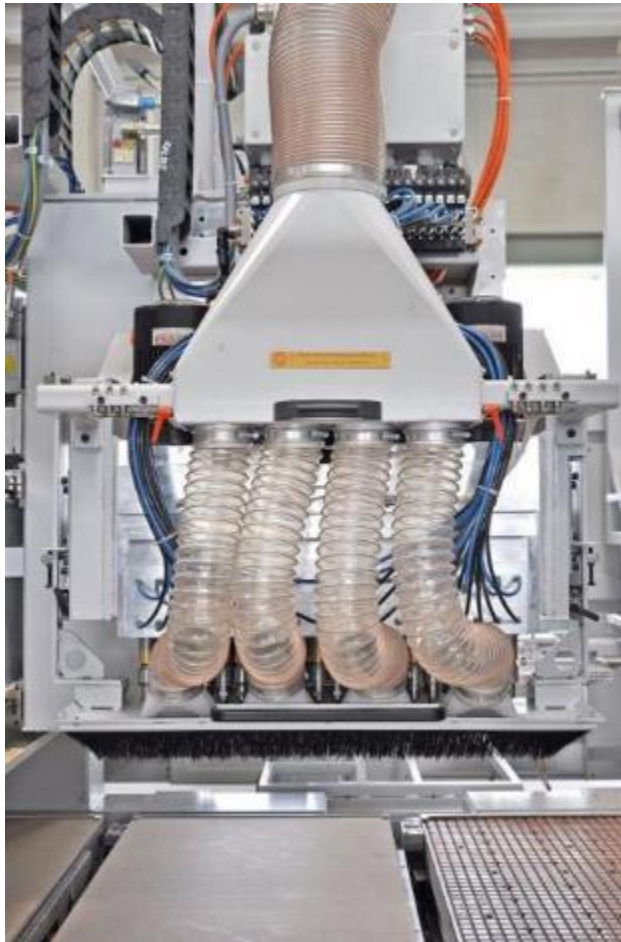
Vehicle construction

COMPOSITE MACHINING



Components suitable for machining by an ECO-NTX





Acoustic panels



Finished parts



Mold construction



Center with linear drive for utmost precision and dynamics in machining aluminum

WOOD MACHINING



Walls of wooden houses



Staircase production



Glulam-machining



The ECO 3533 B-Sprint, an all-rounder that permits large plates to be machined from both sides.



4-axes handling system for plates up to 6 m in length on the set-up station of the ECO 3533 B-Sprint at Renggli



Shelf access equipment with storage and retrieval conveyor for various materials and elements at Renggli



Unique cutting performance for large plates



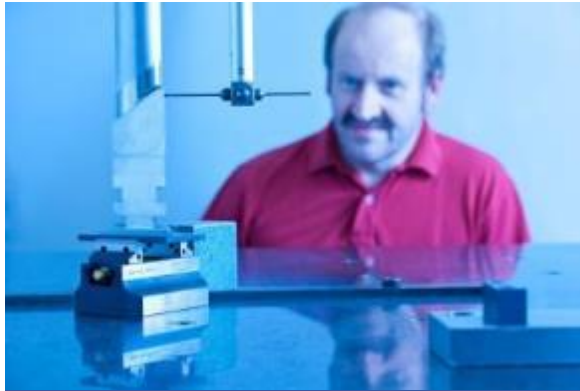
High-tech machining center for efficient door production from batch size 1 to series production

QUALITY & SERVICE

ALL FROM A SINGLE SOURCE

QUALITY

HOW TO MAKE QUALITY MEASURABLE



Scanning /
portal measuring machines



Laser measuring /
setting of the machine



Quality assurance



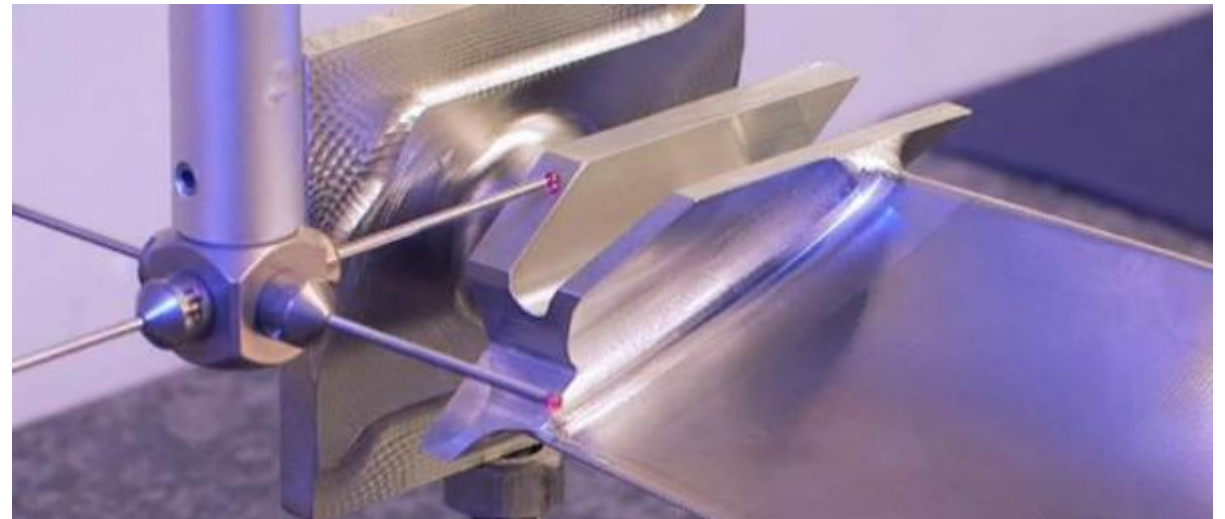
Component inspection



Head measuring

5 good reasons:

- Complicated geometries require complex measuring systems
- Scanning of elements in all angular positions
- More accurate measuring means more economical production
- Optimum solution for quick checks required
- Utmost flexibility



4 good reasons:

- Weak spots in design and manufacturing can be eliminated in the assembly phase
- Customer specifications can be checked and documented without recourse to sensors in the machine
- Flexibility also when measuring large components in traditional quality assurance
- Maximum mobility worldwide



It guarantess that:

- The machines are comprehensively tested prior to delivery
- Continuous quality control takes places starting from the machine's individual components up to its completion
- We offer long machine life expectancy at maximum loads



3 good reasons:

- The only possibility to check the accuracy and strength of a joining point
- Prior to their delivery to the customer, the proper functioning and faultlessness of elements is checked
- Advance examination of parts from suppliers or testing of newly developed elements



3 good reasons:

- In all axes, the machining centers travel and position with perfect accuracy
- Feed speeds are dynamically measured for all positions in the entire working area
- The transfer of correction data to the CNC-control system optimizes accuracy





Hotline



Training



Remote Diagnosis



Maintenance



Retrofit

Advantages:

- Motivated staff
- Operating personnel with better skills
- Less time required for the commissioning of the machine
- No downtime by incorrect operation
- Full output reached at an early stage
- No unnecessary trials with expensive material



OUR CUSTOMERS

Powergen

ALSTOM



Bexbach / GER
Elblag / PL
Karlovac / HR
Birr / CH
Belfort / FR
Beijing / CHN
Richmond / USA
Morellia / MEX
Bucharesr / RO

EthosEnergy



WIROMET

DEC 东方汽轮机有限公司
DONG FANG TURBINE CO.,LTD.



HPE

Heilongjiang Dongheng
Trading Co. Ltd.

WTB

GO|NE 国源



ABB



Aerospace



AVIC Shenyang Liming Aero-Engine

AVIC Xian Aero.Engine, Xian,

AVIC Chengdu Aircraft Industry Group

OUR CUSTOMERS

AUTOMOTIVE AND AIRCRAFT CONSTRUCTION



OUR CUSTOMERS

MACHINING OF PLASTICS AND COMPOSITES



OUR CUSTOMERS

MANUFACTURERS OF WINDOWS, DOORS, STAIRCASES AND FURNITURE



**THANK YOU VERY MUCH FOR
YOUR ATTENTION!**