

Multi-optional systems



metrom



Susanne Witt | CEO



**20 years
experience**



15 employees



**>60 systems
worldwide**



ATLANTIC
OCEAN

PACIFIC
OCEAN

AMS
TECHNOLOGY



Guaranteed
Value the future. upgrade the past.



HARALD
LIEBERS
BEHÄLTER-APPARATEBAU GmbH



Constellium

millfax

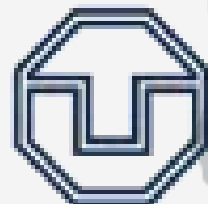
KYOCERA

KITECH

Global Castings

MEIERGUSS

LIEBHERR



TECHNISCHE
UNIVERSITÄT
DRESDEN

Fraunhofer

GSI SLV
Halle

BIONIC
PRODUCTION

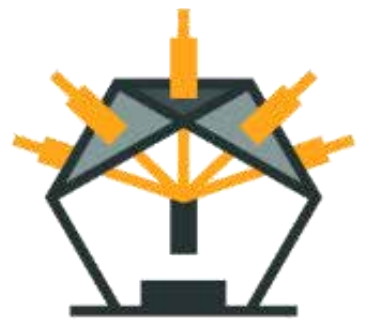
VAPTECH

EAST 4

Carbon Technology



Main advantages

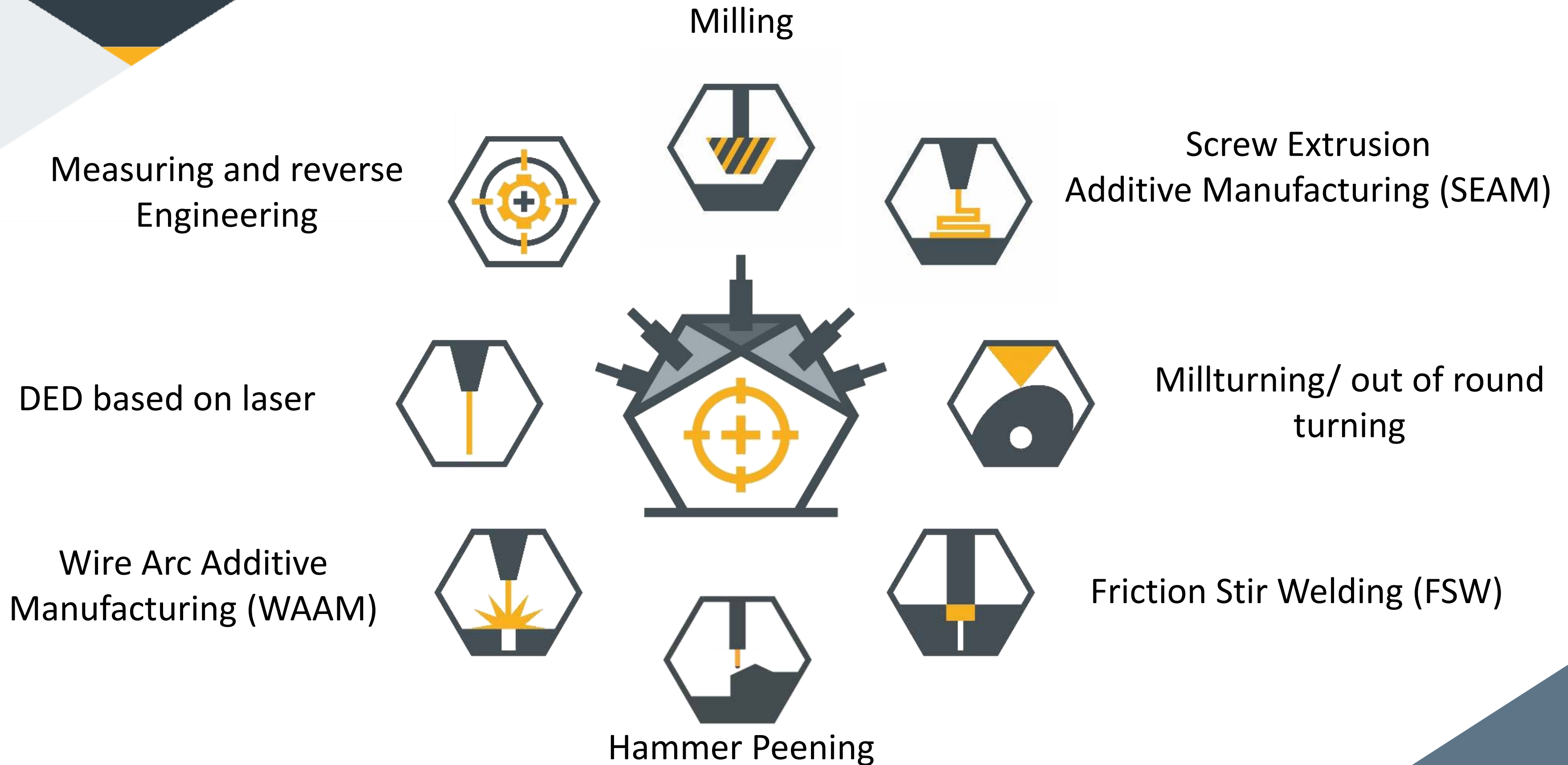


- Direct drives – high dynamic accuracy of 10m/s^2 and 60m/min
- stiff frame design -> no foundation necessary
- Modular solution
- Complete thermal management for accuracy independent from surrounding conditions
- Minimum wear - 5 identical precision ball screws with only longitudinal forces and no additional linear guidance



Robots with the stiffness and accuracy level of
Machining centers

Hybrid apps for pentapod system

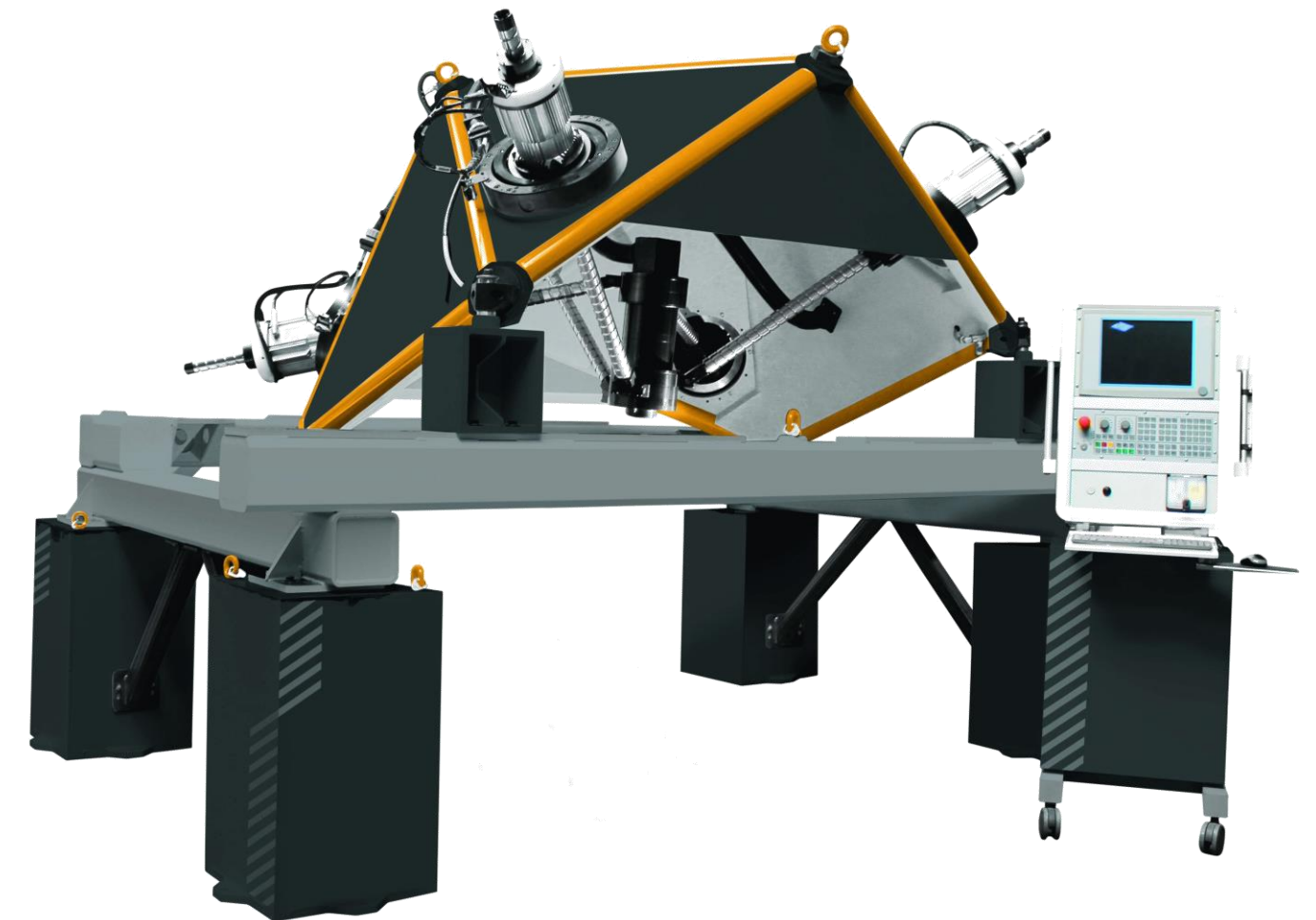


Pentapod Systems

P – Series



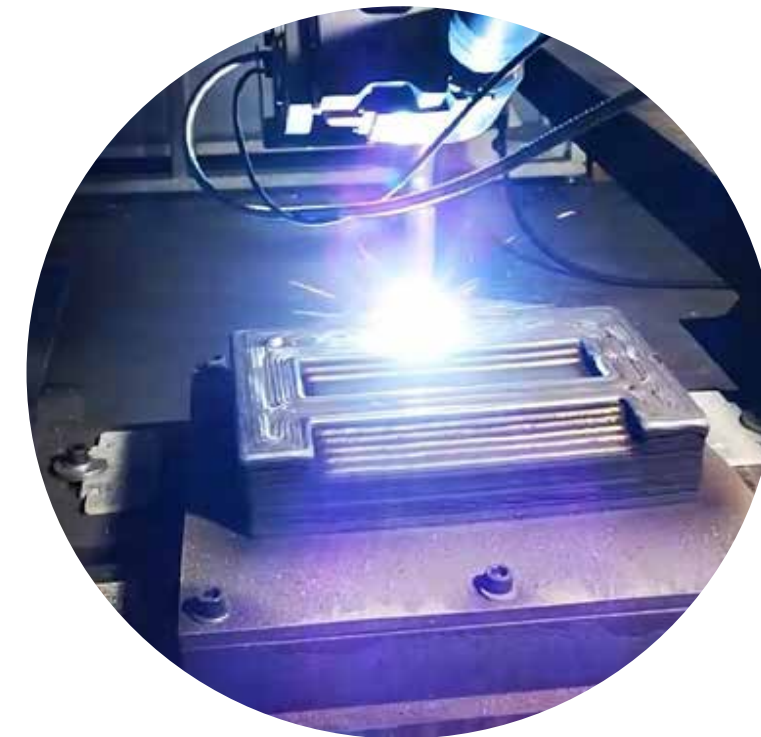
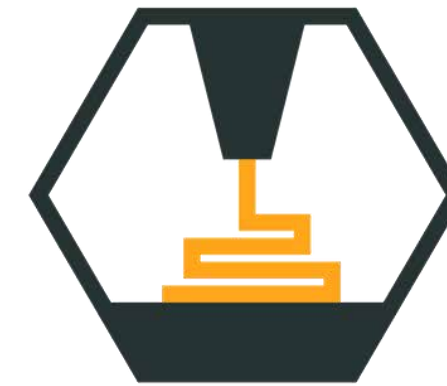
PM – Series



Machining

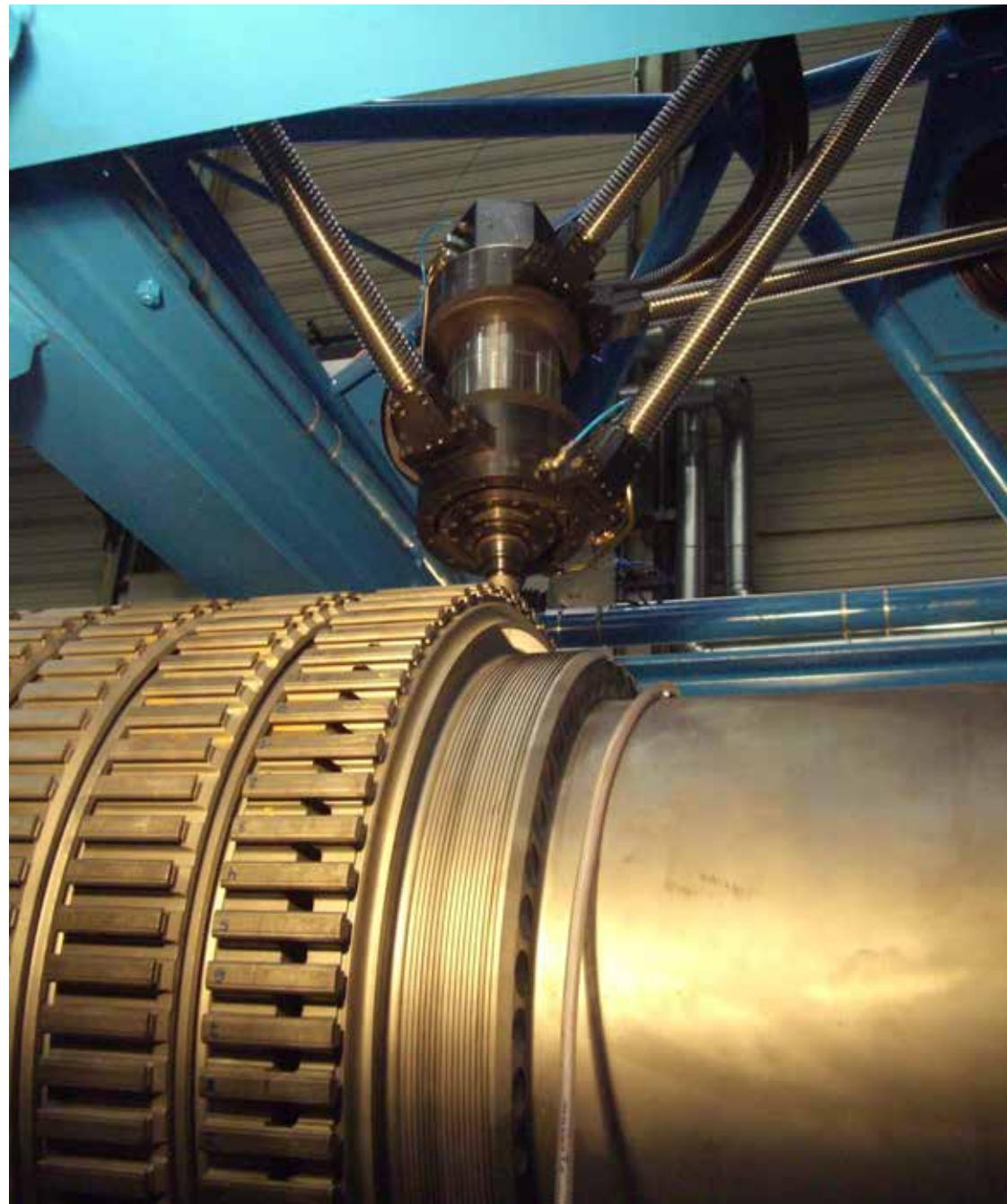


3D-printing



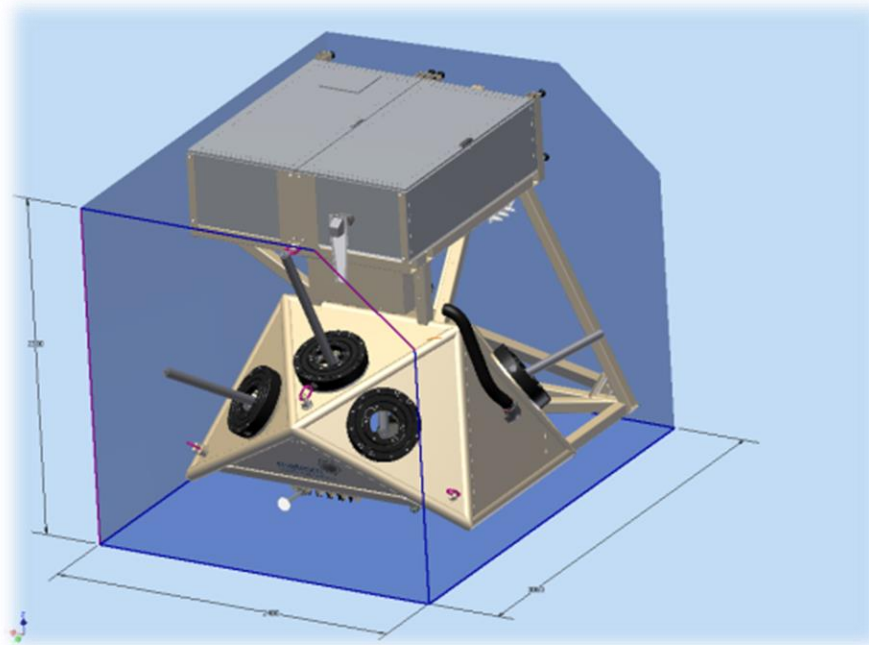
of metals and/or plastics

Success since 2008 – mobile 5-Axis milling machine



- Removal of cracks between fir-tree grooves
- Shortened repair time due to machining on site

Mobile 5-Axis milling machine - transport



Transport in air cargo
container



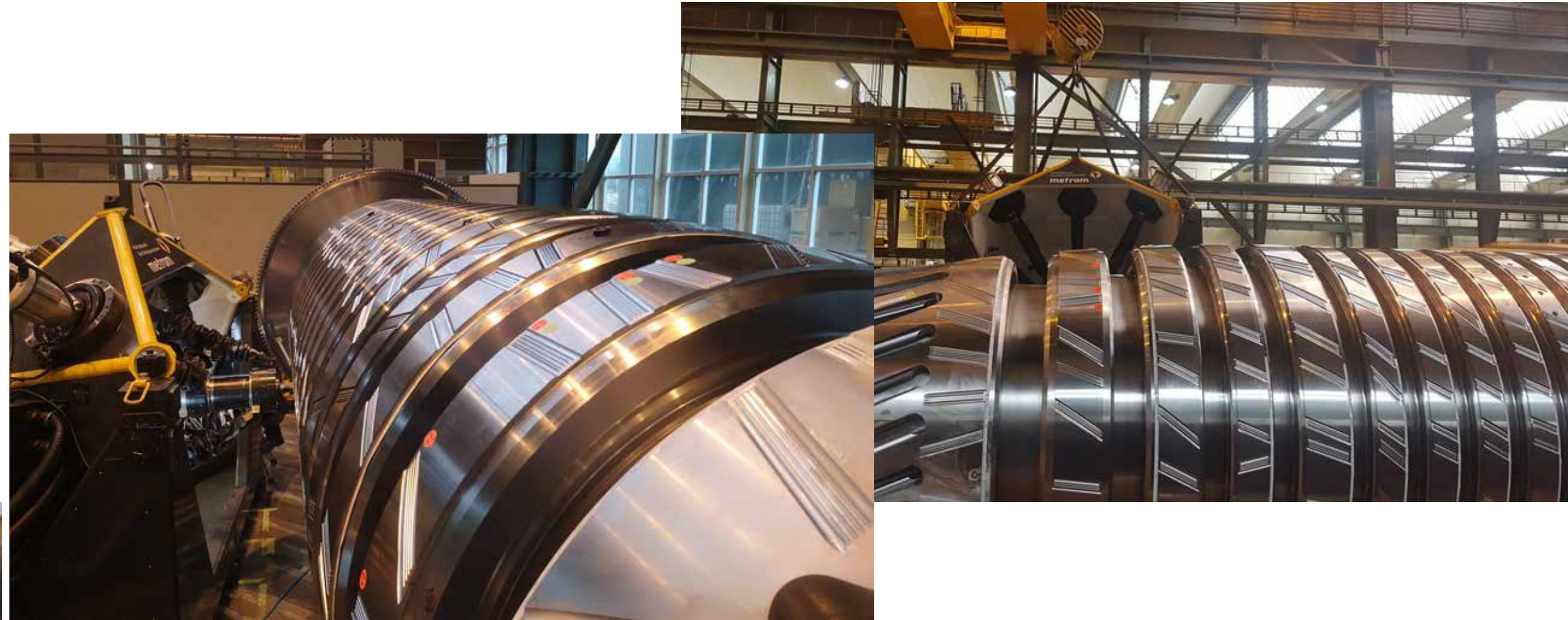
Transport inside the factory



Transport by truck

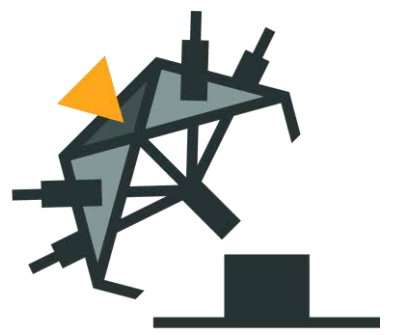


Mobile machine – Modification of turbines

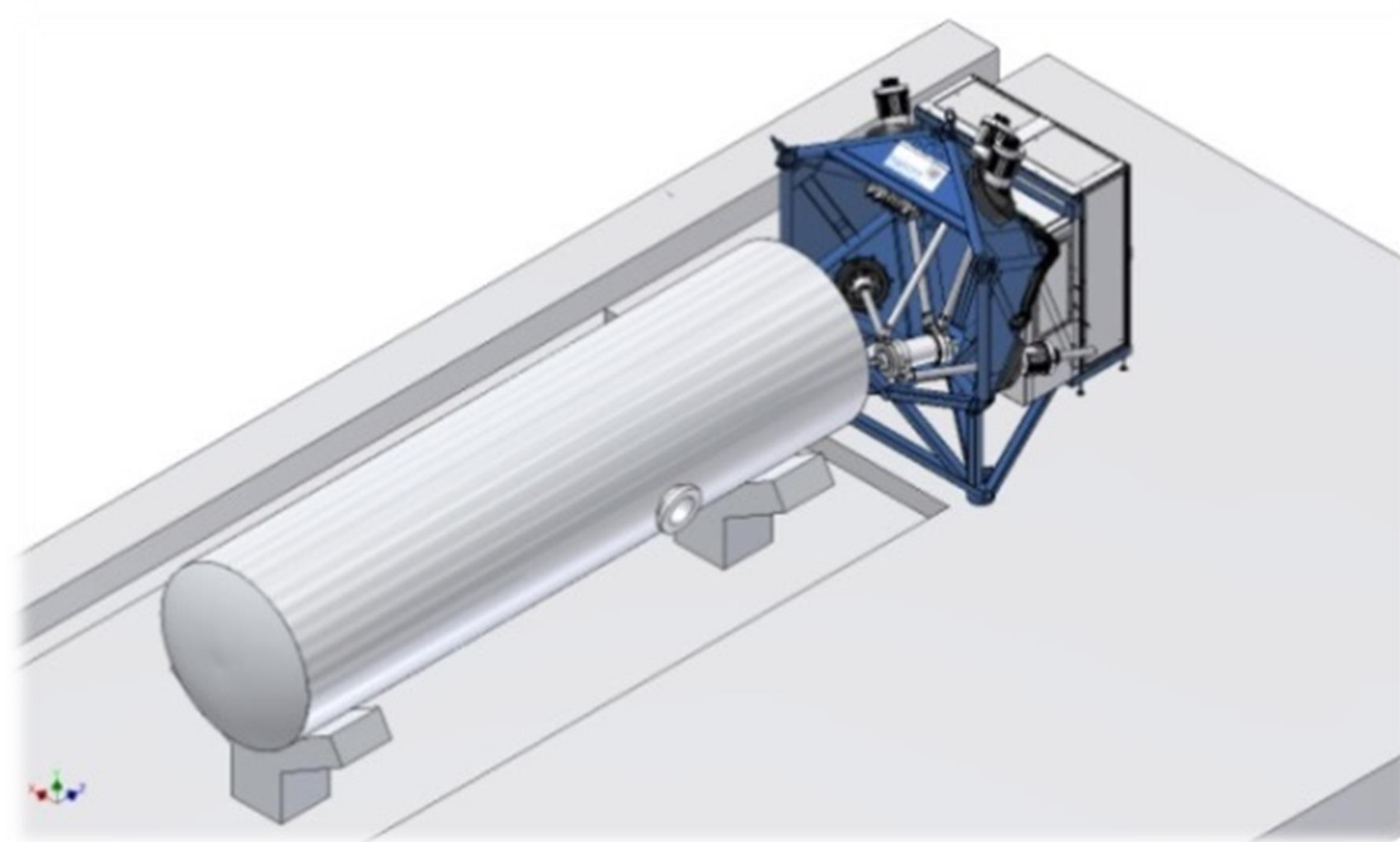


- Machining of cable and sensor wire grooves
- 3 weeks CNC controlled machining instead 14 weeks manual grinding
- Fully digital, reproducible and live on site

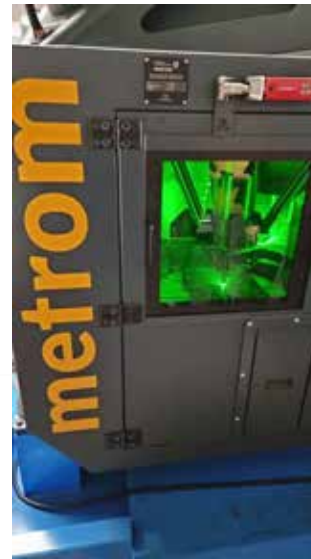
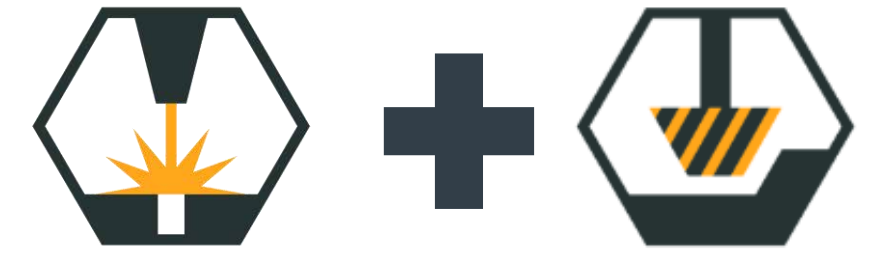
Mobile machine – processing of vessels



processing of groove and nut joint before assembly of the
two sides

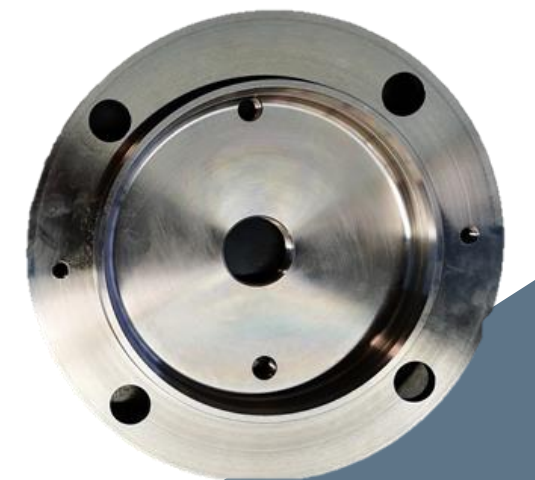
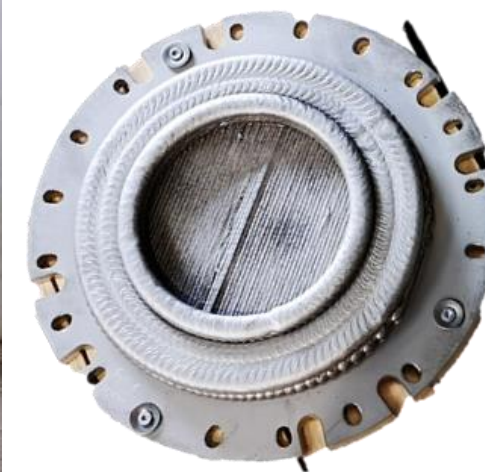


Mobile smart factory



- Part repair and production everywhere in the world
- requirements at customer site - 63A connection, shielding gas

BIONIC
PRODUCTION



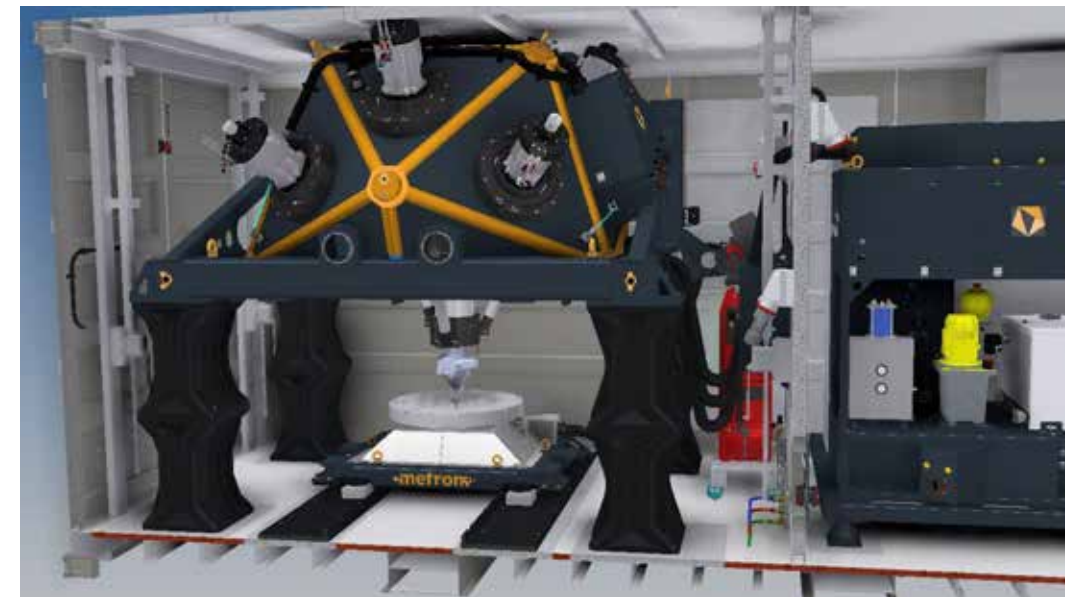
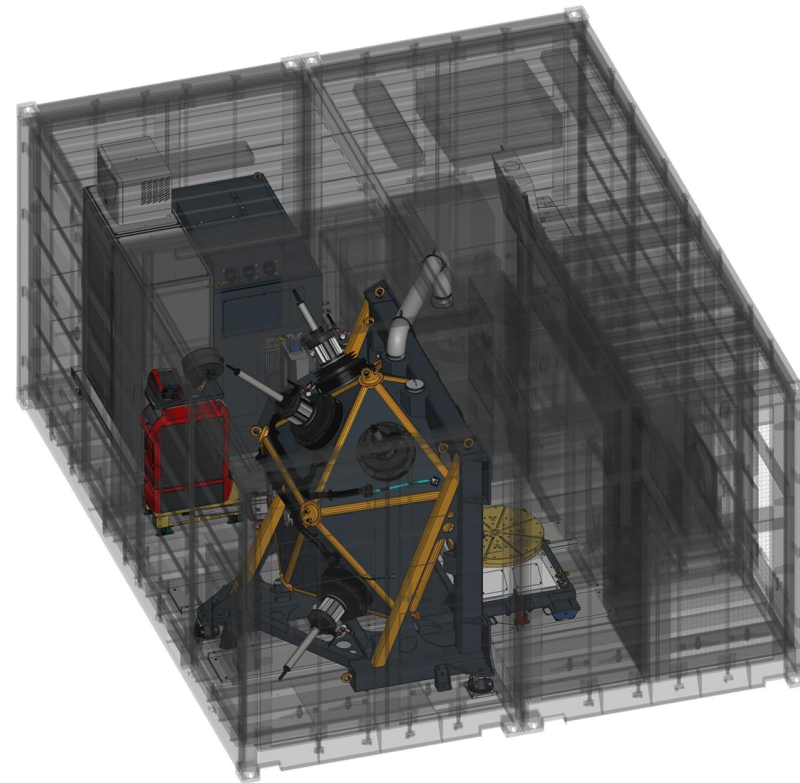
mobile repair factory



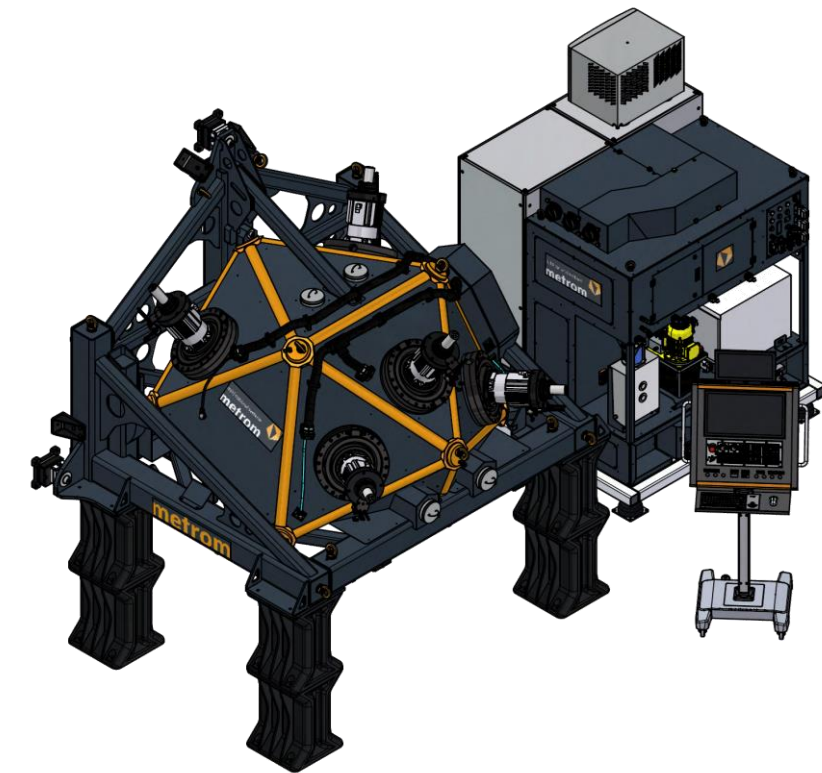
Part repair and production inside AND outside of the container



Vertical setup



Horizontal setup





mobile repair factory



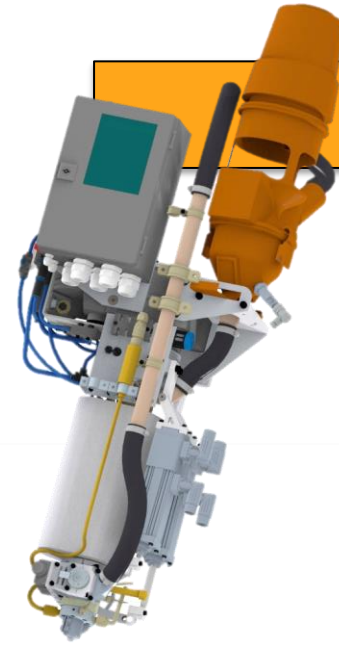
- 2 x 20' High cube CSC shipping containers
- 2x 63A connection
- Milling, turning, laser welding, multiple TIG-welding, CMT-welding, 3D-scanning and inspection included
- Part dimensions to be processed not limited due to:
 - Machine working with open side door of container
 - Machine to be used mobile outside of the container





Flexible
production

Screw Extrusion Additive Manufacturing (**SEAM**) Process



3D-printing unit

Fraunhofer
IWU

1A TECHNOLOGIES
INDUSTRIAL 3D SOLUTIONS

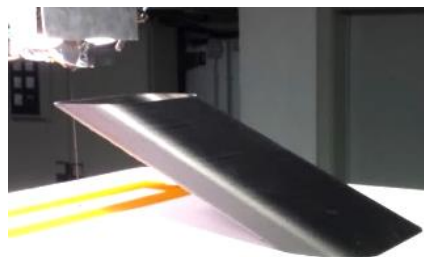


- Compact plasticizing unit for processing standard plastic granulate
- Controlled material discharge from 0.25 to 7 kg/h
- Temperatures up to 300 °C → high temperature plastics
- pressure up to 350 bar, up to 100 bar between nozzle and substrate
- Exchangeable discharge nozzle (e.g. Ø 1 mm)

Process Advantages

3D Printing Process

- Reduction of construction time approx. 70% trough
High plasticizing capacity 250 ... 7000 g/h
High desposting speeds up to 1 m/s
Variable strand widths realizable, no infill
- Overhangs up to 65° can be realised without support structure
- Cold workspace realizable



Materials

- Cost reduction up to 95%
- Series materials in granulate form
- semi-crystalline thermoplastics with fibre reinforcement can be processed (PA 6 GF / CF; PP GF; ...)
- thermoplastic elastomer TPE (71...90 Shore A) can be processed
- Filler content up to 80



Components

- high mechanical properties (PA6 CF40:
E1= 25.000 MPa, s11=170 MPa,
E3= 4.800 MPa, s33= 55 MPa)
- tight for vacuum and liquids
- Same surface quality as standard FLM process



SEAM Hex – real 5-axis 3D-printing of large structures

Kinematics:

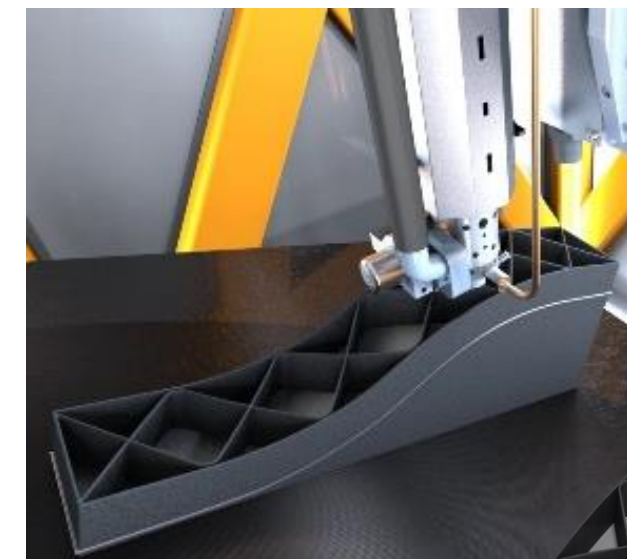
- up to 1 m/s table speed
- 6-axis parallel kinematics
- Z-adjustment plasticizing unit (7th axis)

material management:

- predrying
- Automatic conveying
- Recycling

advantages:

- Several parts printed at the same time
- Printing along given contours



PentaSEAM

Hybrid system for machining and printing



[Europawoche SMWA METROM](#)

Innovation award and Intec award 2019

A woman with blonde hair, wearing a dark blazer over a white patterned shirt, is smiling and looking at a robotic arm. She is adjusting a component on the arm. The robotic arm is black with yellow safety cables and is mounted on a metal base. In the background, another person with curly hair is partially visible, looking at a computer monitor. The scene is set in a laboratory or industrial environment.

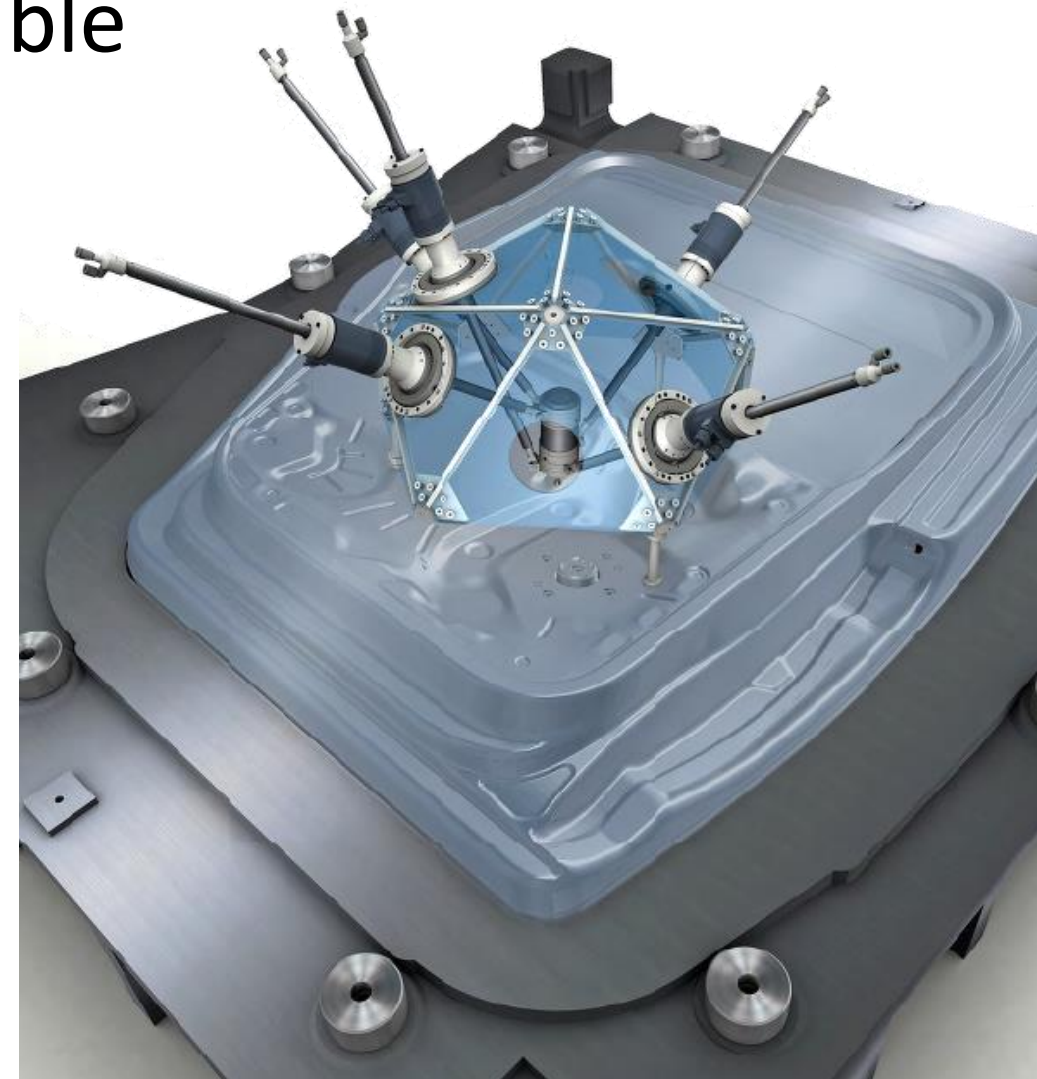
**Precision +
lightweight**

METROM –PM100 (small mobile machine)

source: Leipziger Messe



- Size without struts: 500mm x 500mm x 500mm
 - Working envelope 5-axis: 100mm diameter
 - weight: < 100kg
 - spindle: 1kW / 0,2Nm / 60.000 rpm
- >modification possible



Make your vision come true

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