



Finding a better way ... in Post Processing
One partner – many AM Solutions



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1. Introduction AM Solutions / Rösler
2. Technology Portfolio at AM Solutions
3. Application examples
4. Equipment portfolio
5. Process combinations




Germany

- Sales and customer center
- Main production facility, equipment manufacturing mass finishing and shot blasting
- Customer Experience Center for mass finishing, shot blasting & additive manufacturing
- AM Solutions
- Rösler Academy
- Chemical lab
- Fully automated central warehouse
- Compound production
- Media production

Fakts and figures about the Rösler Group

+15.000
Media & Compounds


1.800
Employees
worldwide

Quality
Made by Rösler

+80
Years
Experience across
many industries

 **RÖSLER ACADEMY**
Technology. Training. Innovation.

+25
Training seminars


Automation &
Digitization

 **24h**
Service

16
Branches
+150
Distributors globally

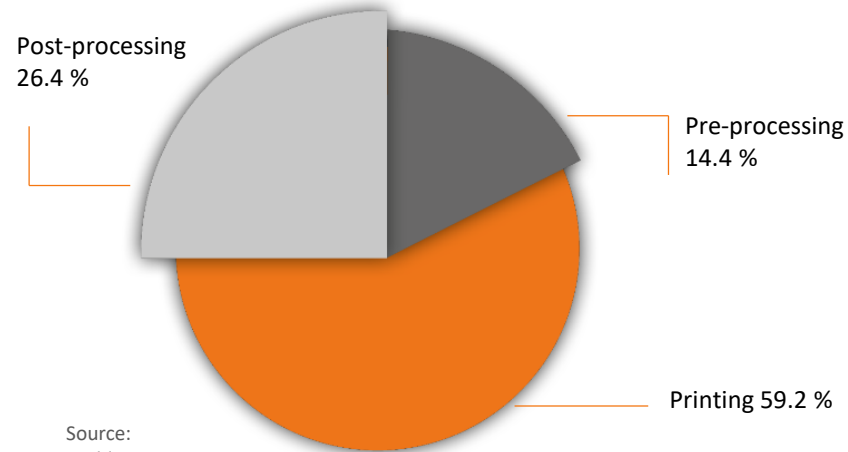

80.000 m²
Production
& Development
at the German
locations

**Global
Customer
Experience
Centers**
Mass Finishing
Shot Blasting
AM Solutions

 **277**
Mio €
Sales Volume

+ Transmission manufacturers
+ Machine and systems engineering
+ Coin industry
+ Mills
+ Tool industry
+ Aerospace
+ Additive production
+ Medical
+ Painting and coating
+ Foundry industry
+ Chain manufacturers
+ Jewelry and glasses industry
+ Natural stone industry
+ Gastronomy
+ Automotive
+ Forging industry
+ Stamping technology
+ Steel construction
+ steel trade
+ Shipyards and ship building

Cost per AM part

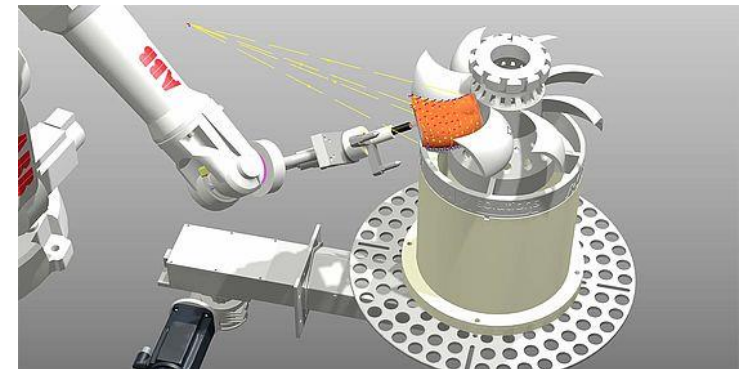


Source:
Wohlers Report 2019

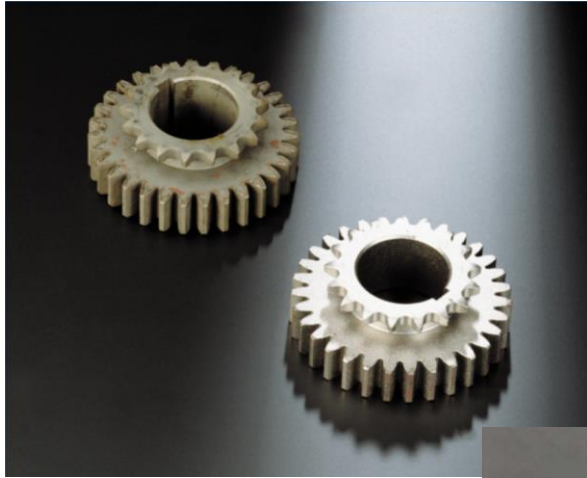
Manual post processing



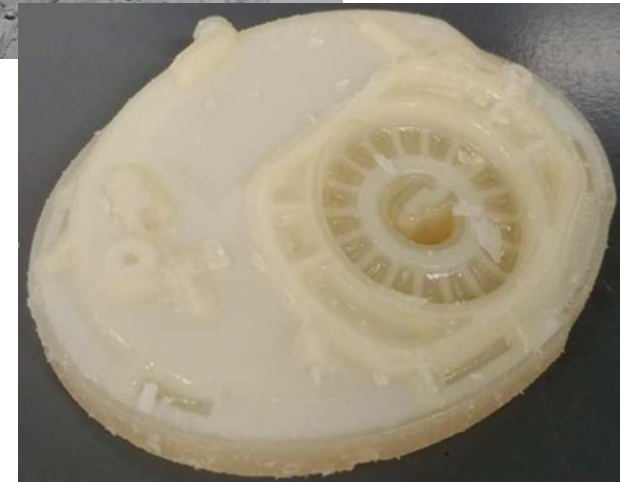
Automated post processing



Expectation



Reality





Manufacturing service partner

3D post processing technology

Engineering, (re)design, printing, finishing of additive manufactured parts

Development & sale of machines for the post processing of additive manufactured parts

(Location: Italy)

(Location: Germany)



3D post processing technology



GPAINNOVA





Technology Portfolio





Mass finishing



- Grinding the surface
 - Polishing the surface
 - Deburring the surface





Consumables

- Development and production for over 60 years
- Compounds (cleaning chemicals)
- 15.000 different types of abrasive media
- Unique consumables programme
 - unmatched in variety and quality
- Only environmentally friendly raw materials are processed
- High ecological requirements

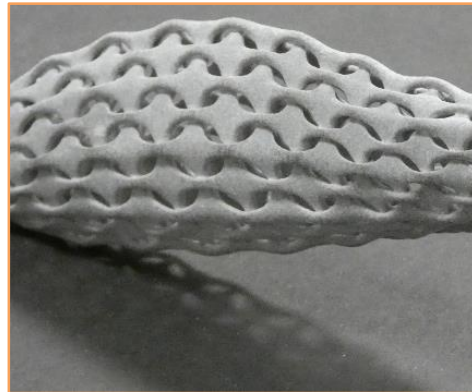
Mix Materials

- Optimized for plastics
- New materials under development
- Defined material removal rates
- Can be used for a wide range of geometries

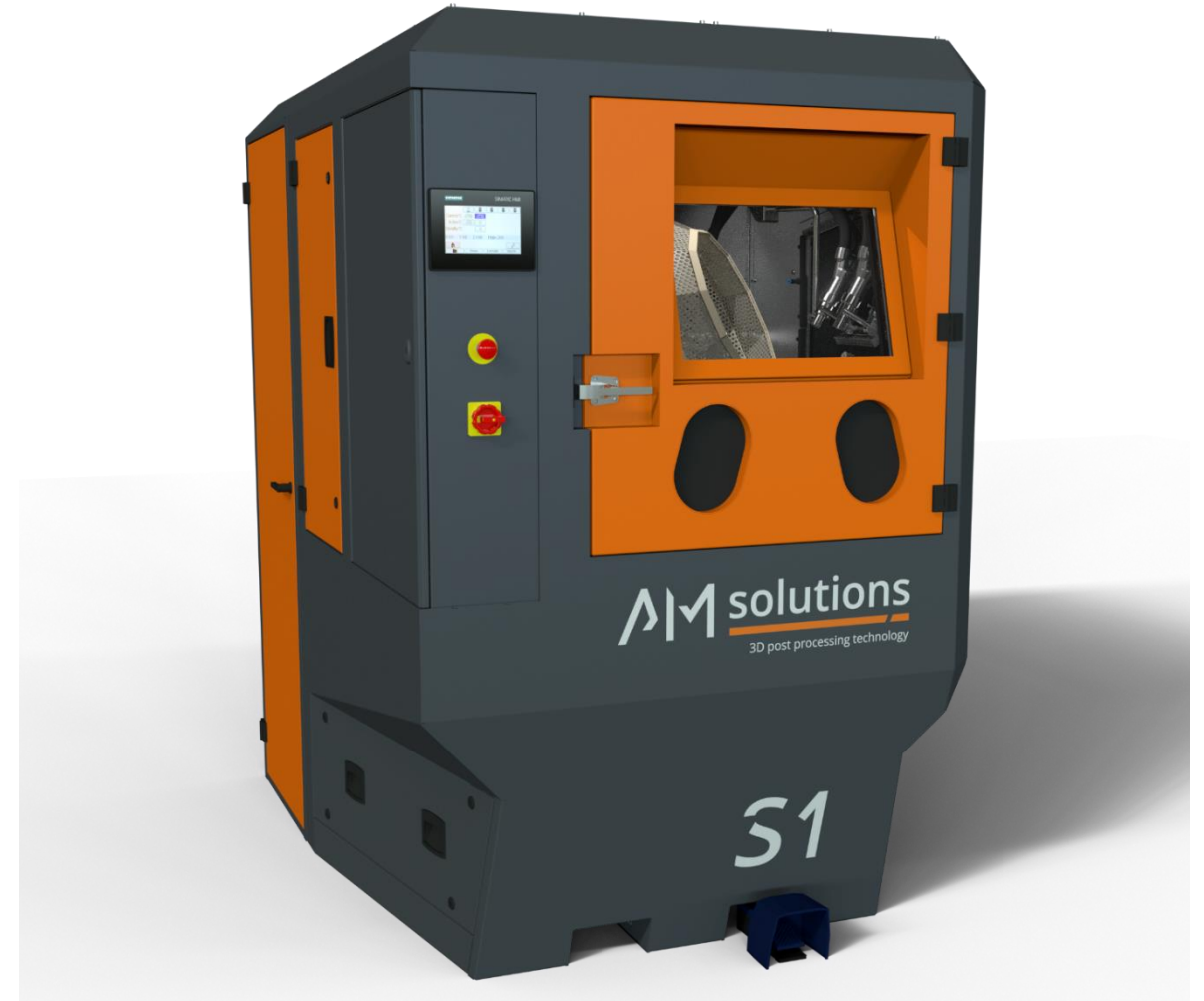




Blasting (dry & wet)

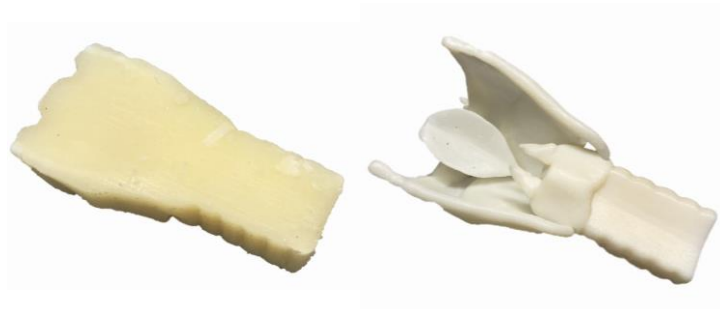


- Powder Removal
 - Smoothing
 - Homogenization

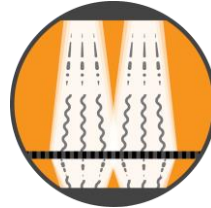




Submersed Vortex Cavitation



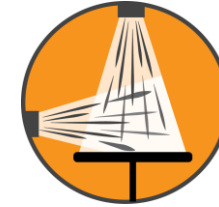
- Support removal
Polyjet / SLA



Volumetric Velocity Dispersion



- Support removal
FDM / FFF

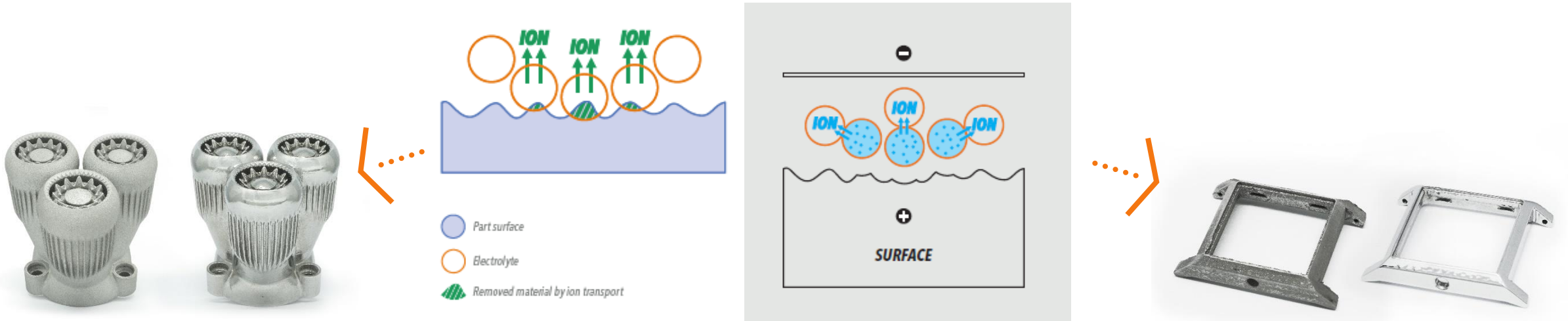


Thermal Atomized Fusillade



- Powder removal
- Surface finishing

GPAINNOVA- DryLyte process



- Take tolerances into account and maintain original shape
- Ra < 0,09 Micrometer
- Eliminates micro scratches

- Traceable industrial process
- Controlled costs and predictable lead times

Applications / Materials



MILLING
TITANIUM



CNC
INOX316L



CNC
HSS1.3505



CASTING
COPPER



CNC
HSS 1.3343



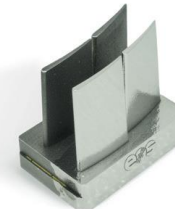
LASER CUT
NITINOL



SINTERED
COBALT CHROME



SINTERED
TITANIUM



SINTERED
INCONEL 718



SINTERED
INOX316L

Application examples



Unpacking of powder bed based polymer parts

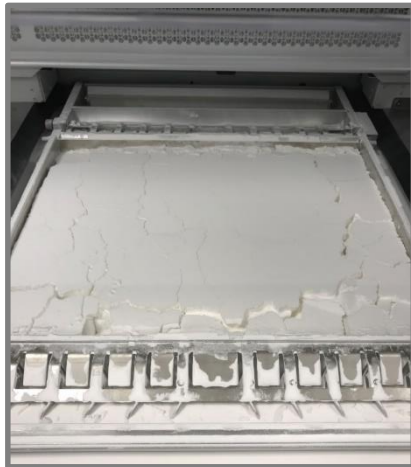


Total time: **0:14h**

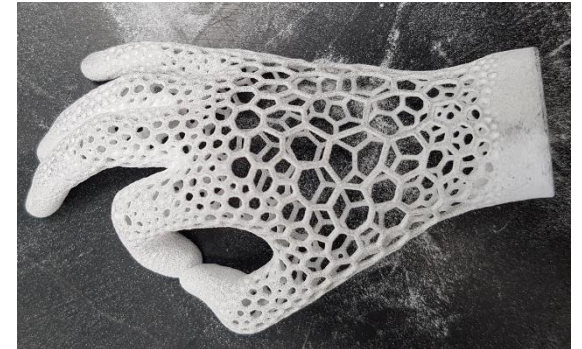
Loading time: **0:02h**

Process time: **0:10h**

Unloading time: **0:02h**



unpacked parts



Recyclable powder



Depowdering / cleaning of polymer parts

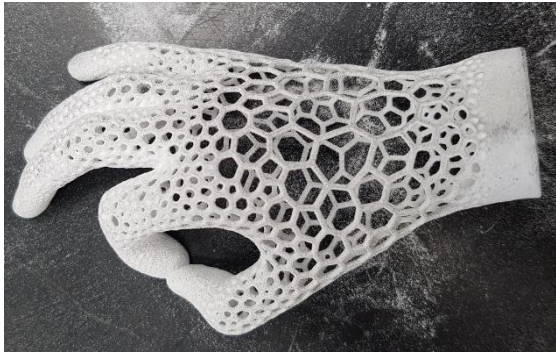


Total time: **0:16h**

Loading time: **0:01h**

Process time: **0:10h**

Unloading time: **0:05h**



Unpacked parts



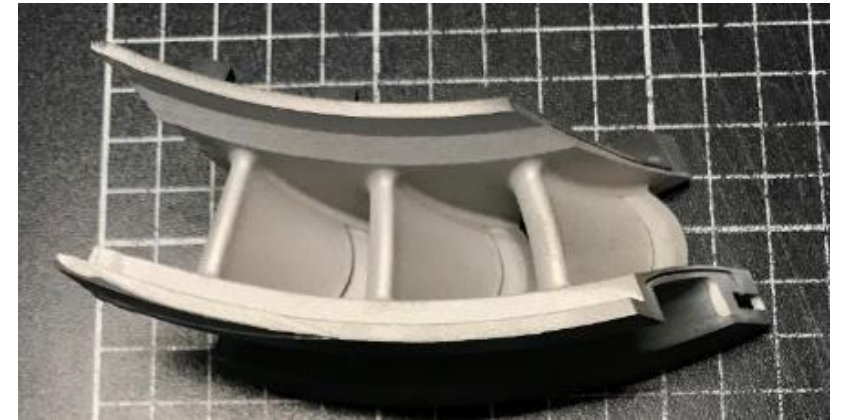
Clean parts



Post Processing of powder bed based printing processes for metals – wet blasting



Ra: 15 - 20 μm



Ra: 1,5 - 3 μm

Work pieces

- Different kinds of plastic / metallic components printed with a powder based 3D printing method

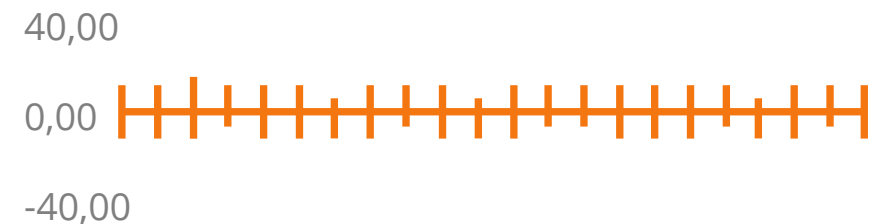
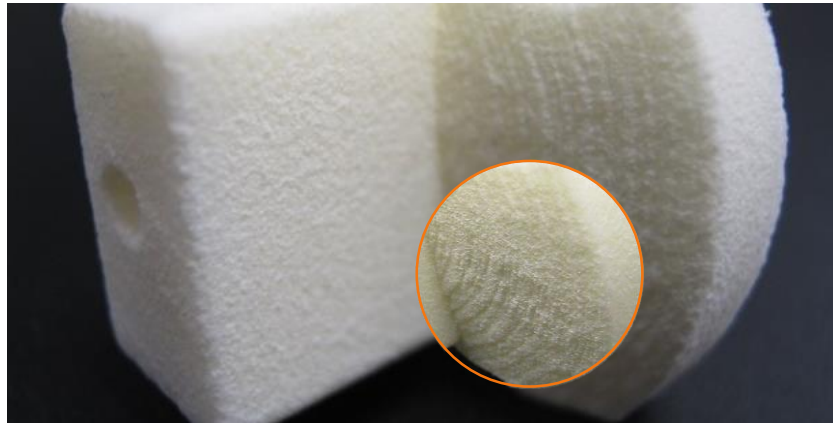
Treatment purpose

- Depowdering / Surface homogenization
- Ra smoothing
- Abrasive: AlOx / Glass beads

Advantage of wet process

- Access to all the surface / Fine work
- No risk of inclusions
- Preservation of edges and dimensions
- No damage on sensitive material / parts

Post Processing of powder bed based printing processes for plastics - cleaning





Starting condition

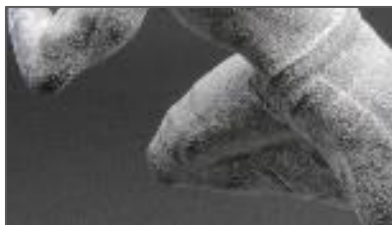
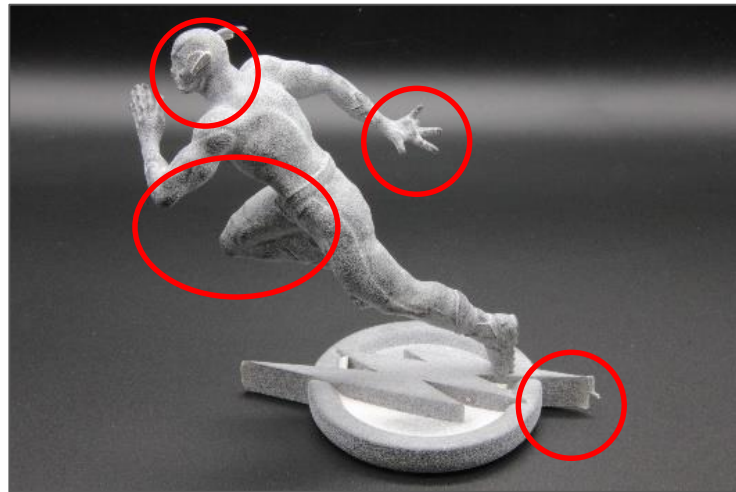
Standard →



AM solutions
Technology →



Treatment of delicate details

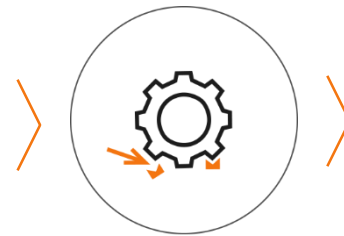


Support Removal with PPT DEMI

Manual Support Removal:
Technician Time per Part:
2 Minutes

Technician Time per Batch:
400 Minutes

Total Process Time.
400 Minutes



Support removal



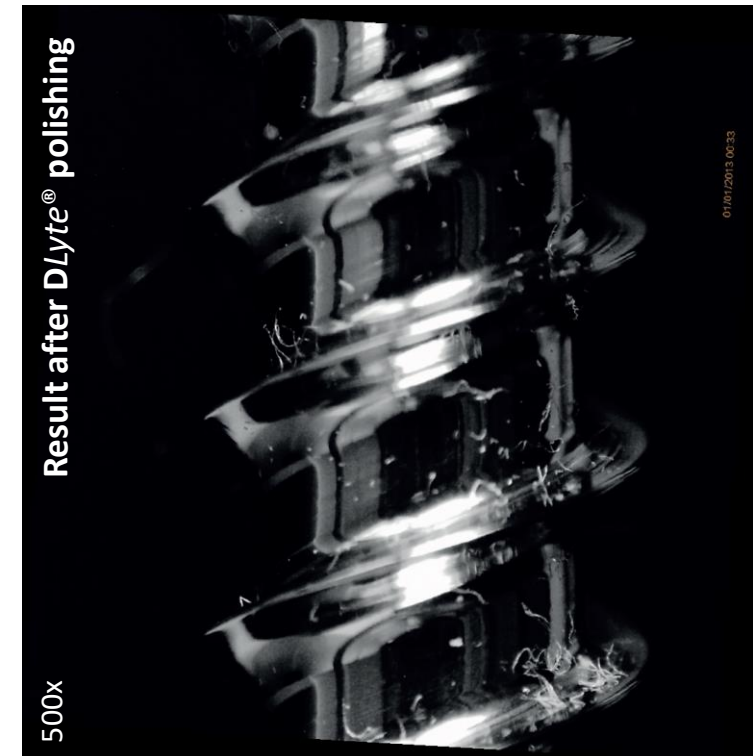
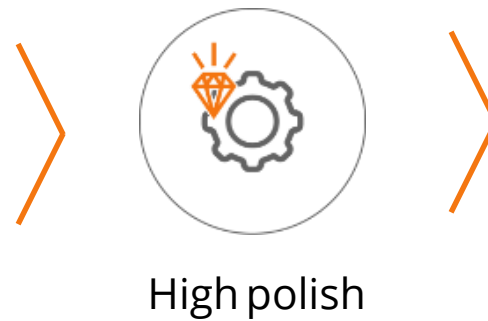
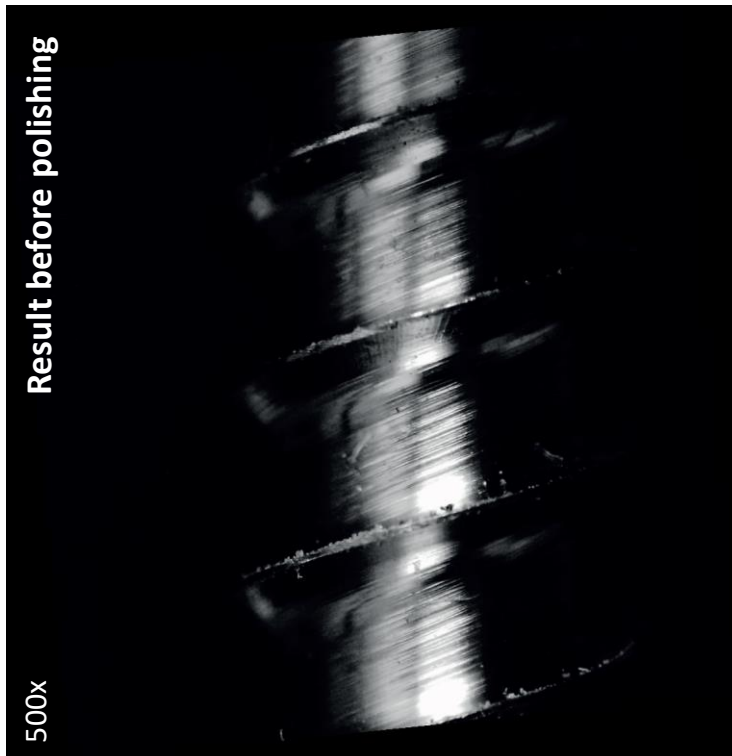
Automated Support
Removal:
Technician Time per Part:
0,025 Minutes

Technician Time per Batch:
5 Minutes

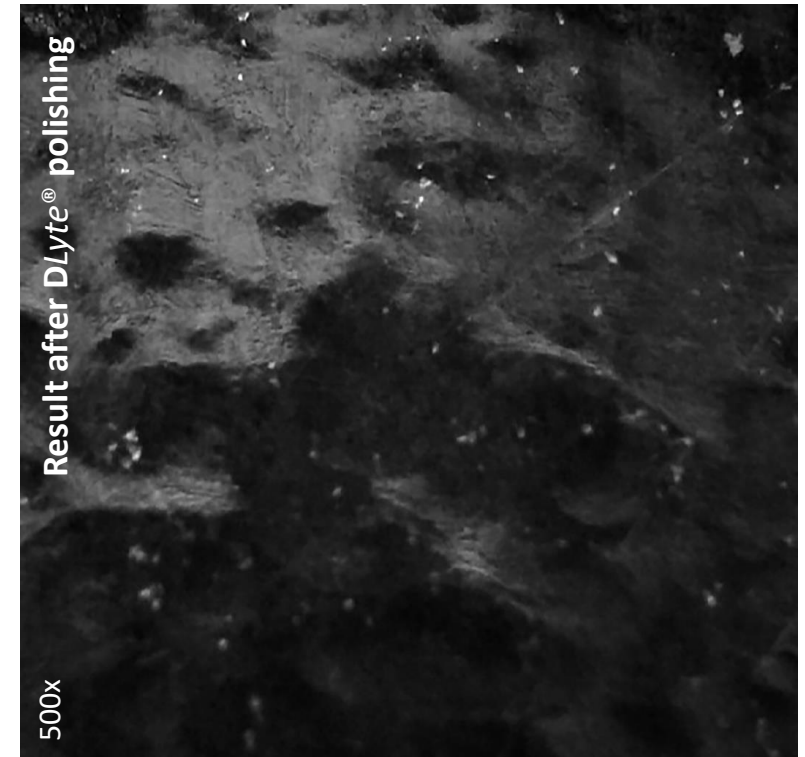
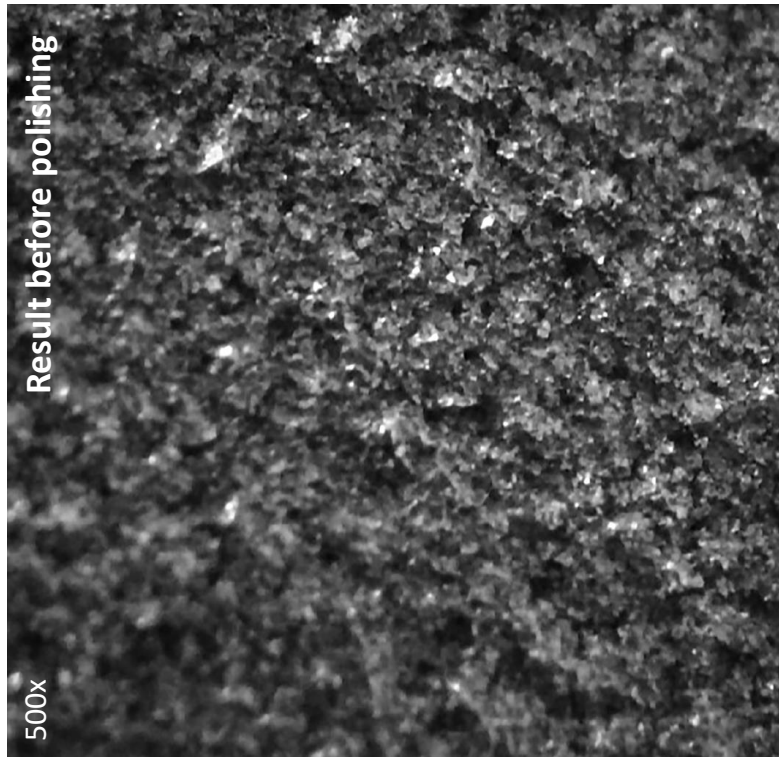
Automated Process Time
240 Minutes

Total Process Time
245 Minutes

Post Processing with DryLite of milled metallic parts



Post Processing with DryLyte of AM metallic parts



Portfolio



M1



Surface finishing

Plastic

Metal

M2

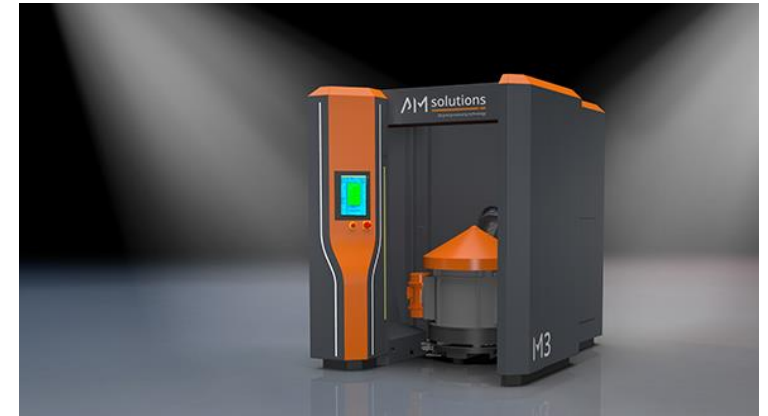


Surface finishing

Plastic

Metal

M3



Surface finishing

Plastic

Metal

AM Solutions S-Line



S1



Powder removal Surface finishing Plastic Metal

S2



Powder removal Surface finishing Plastic

S3



Powder removal Support removal Surface finishing Plastic Metal

M1 Basic



- Surface finishing
- Plastic
- Metal

S1 Basic



- Powder removal
- Surface finishing
- Plastic
- Metal

S1 wet



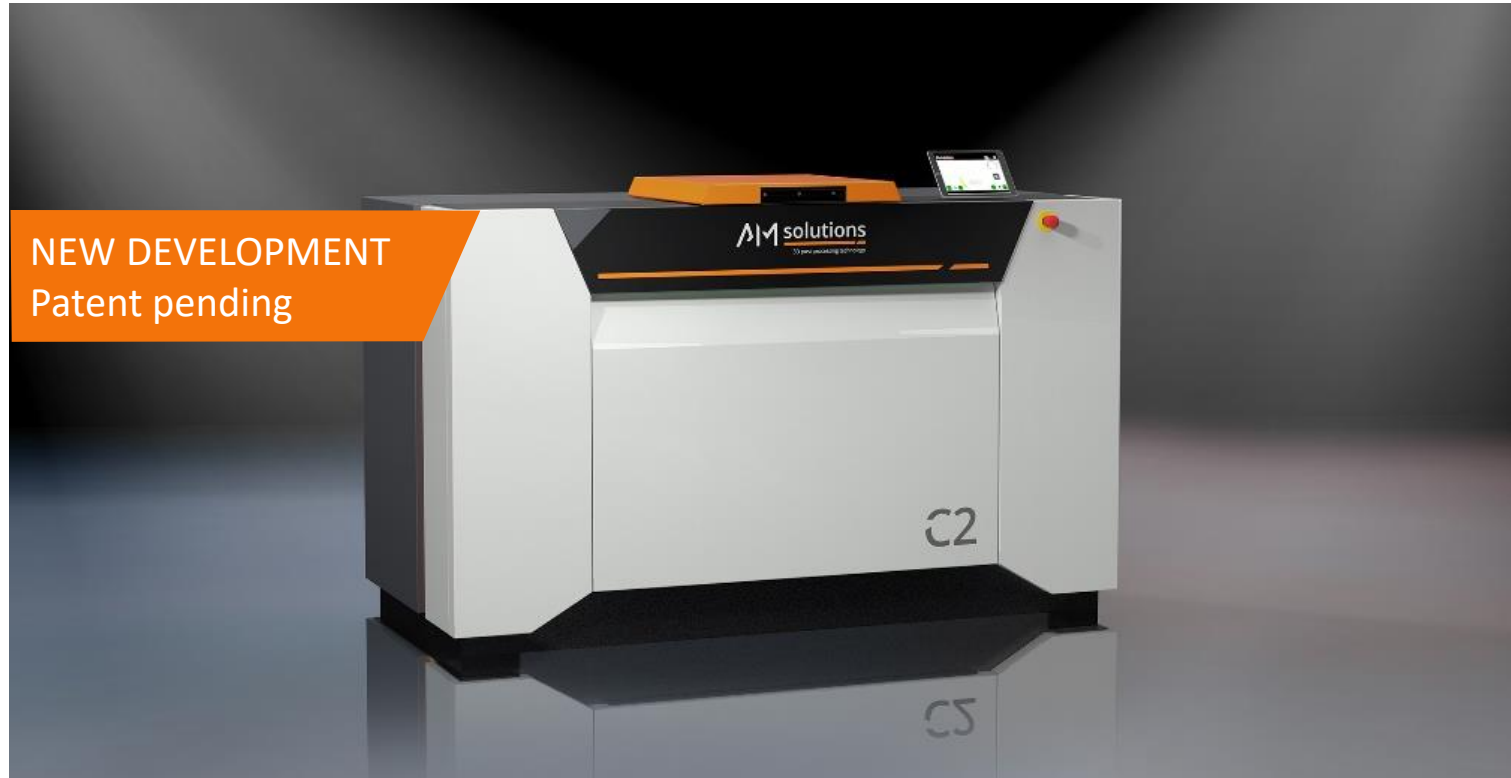
Powder removal Support removal Surface finishing Plastic Metal

S3 wet

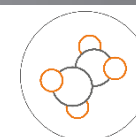


Powder removal Support removal Surface finishing Plastic Metal

C2



LCF



Plastic

3D Automatic Unpacking Station (HP)



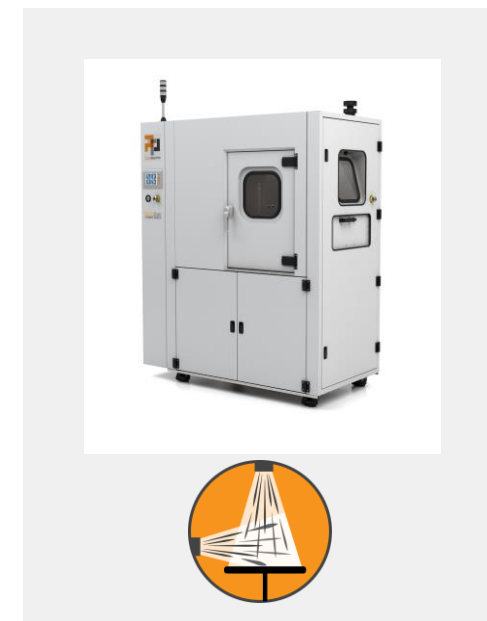
- Industrial solution approach
- Automatic (unmanned) operation
- Reproducible results
- Ideal for small - medium part geometries
- Easy process adaptation
- Optimised interface (transfer)
- Process time < 30 minutes
- Remote monitoring and data tracking

UNIQUE SOLUTIONS THAT EXECUTE OUR CODE
TO DELIVER **CUSTOMER-READY PARTS...**

SUPPORT / RESIN REMOVAL SERIES



HYBRID SERIES



DLyte1I



Workpiece capacity
Ø75 mm x 50 mm

DLyte10I



Workpiece capacity
Ø120 mm x 50 mm

DLyte100I



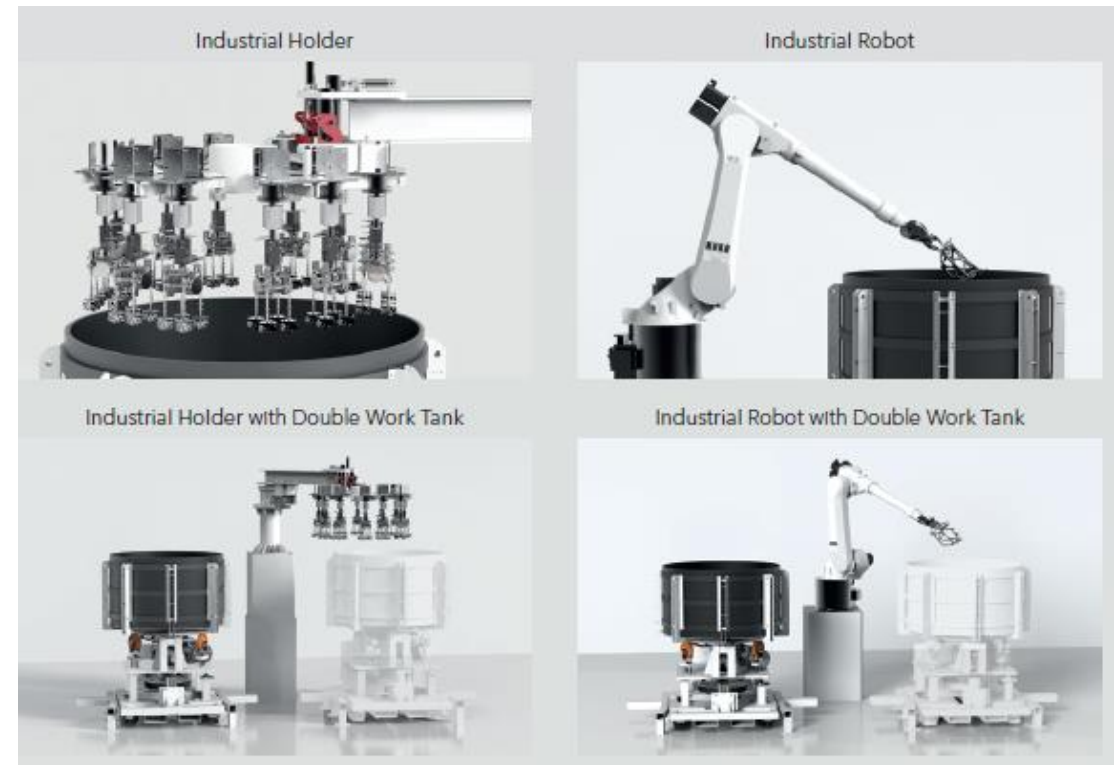
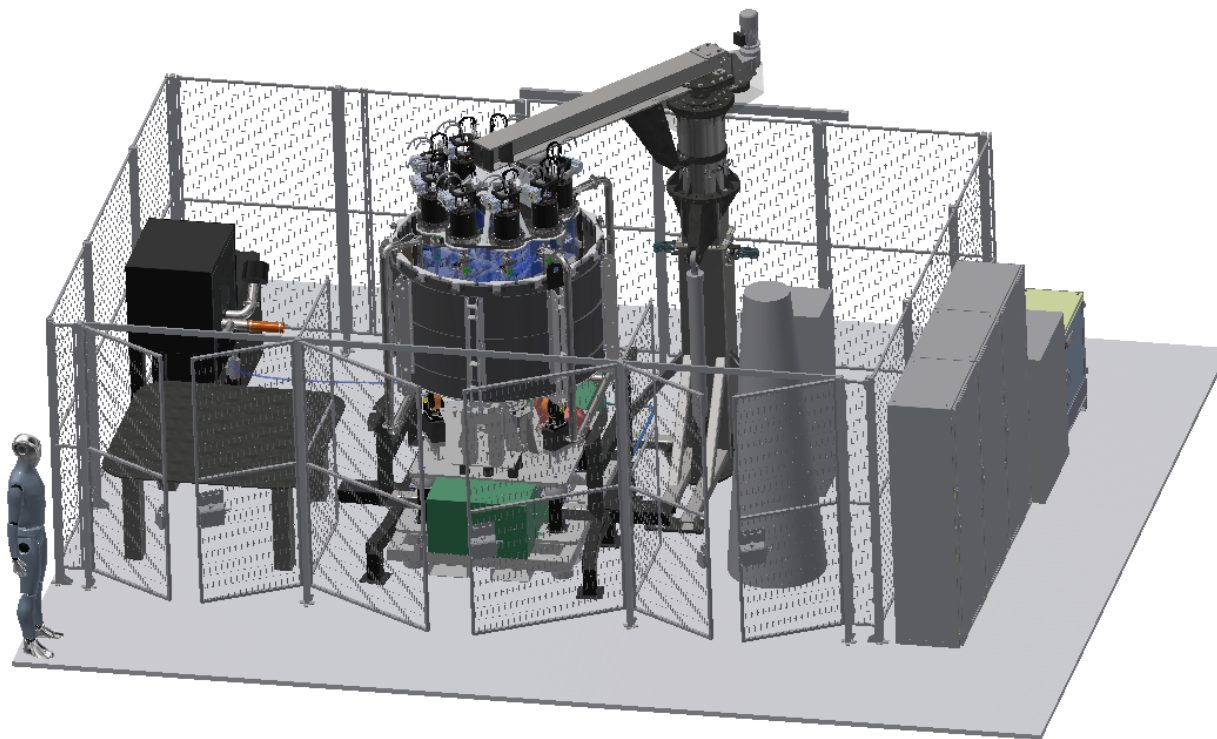
Workpiece capacity
Ø180 mm x 80 mm

DLyte PRO500



Workpiece capacity
Ø700 mm x 250 mm

Modular solution for series production



Process combinations



Starting Conditions

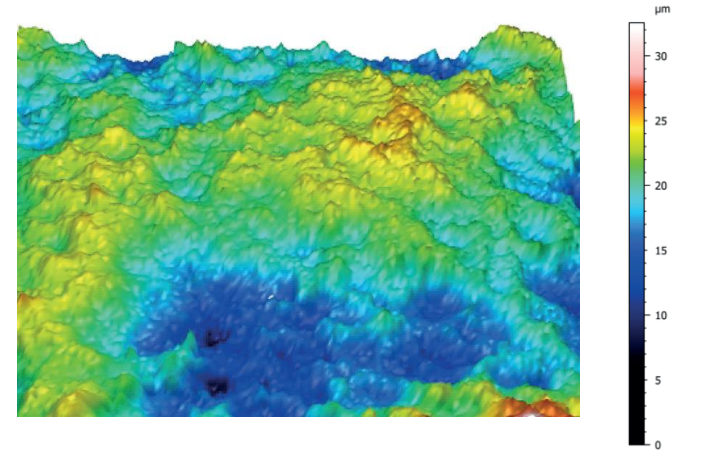
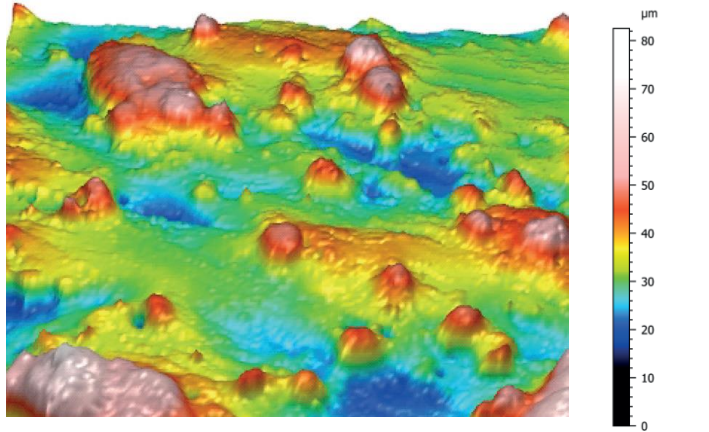
- Material: 316L
- Printed EOS M290
- Appearance
 - Matt finish, as printed
 - Powder removed
 - Support removed
- Surface Conditions:
 - $R_a = \sim 10 \mu\text{m}$
 - $R_z = \sim 70 \mu\text{m}$



Treatment – Blasting

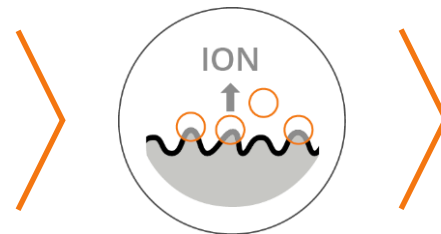


Treatment Blasting

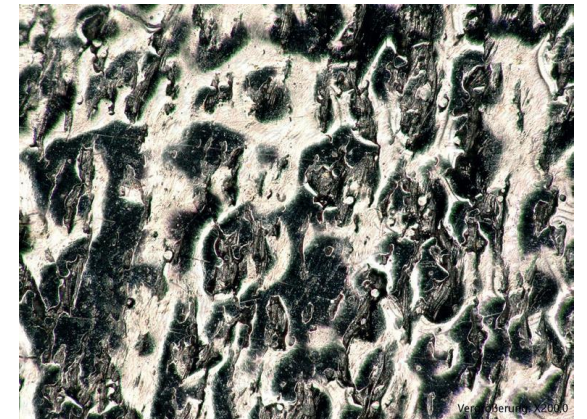
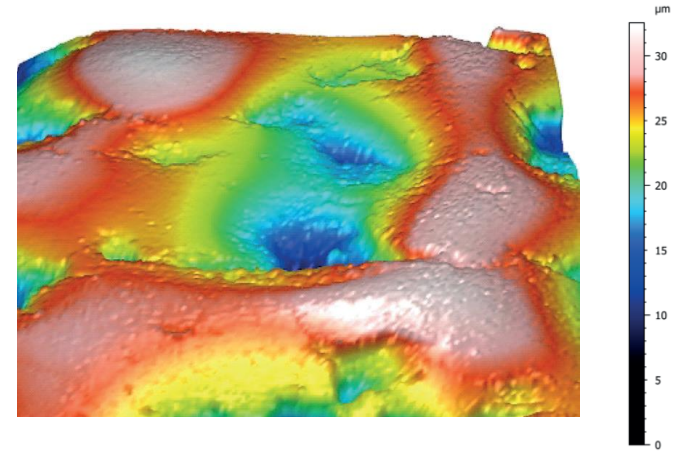
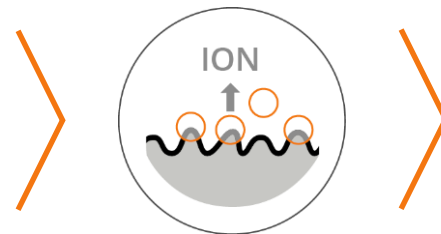
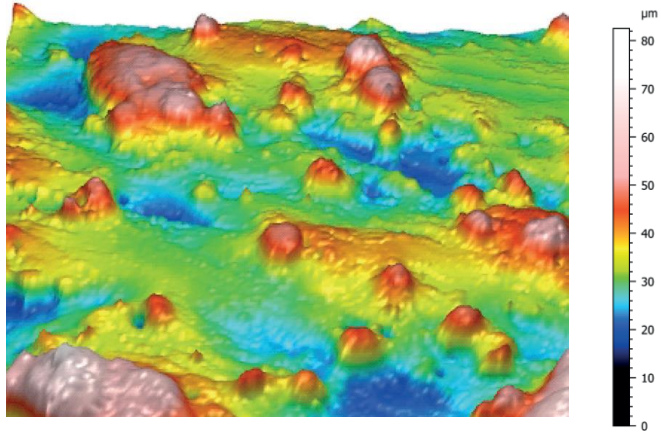


	Ra [μm]	Rz [μm]
Raw part	9,5	69
Post treatment	6,0	34,5
Change (%)	- 36,84	- 50

Treatment – DryLyte

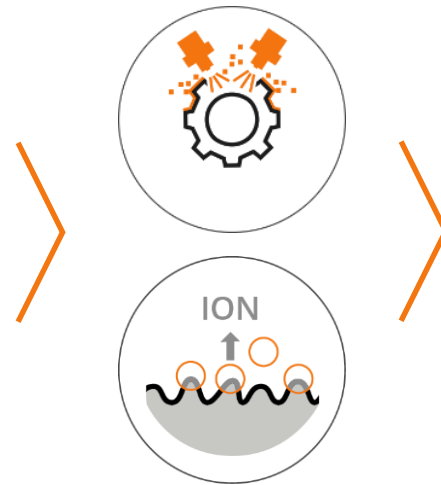


Treatment – DryLyte

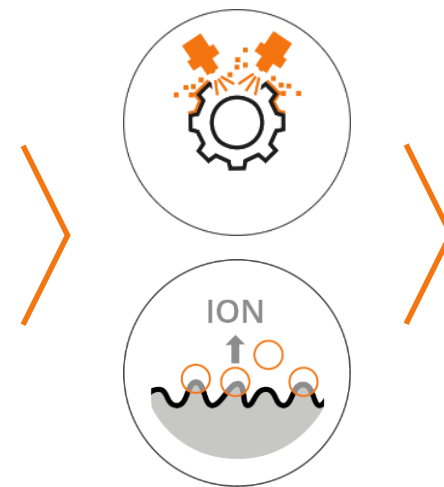
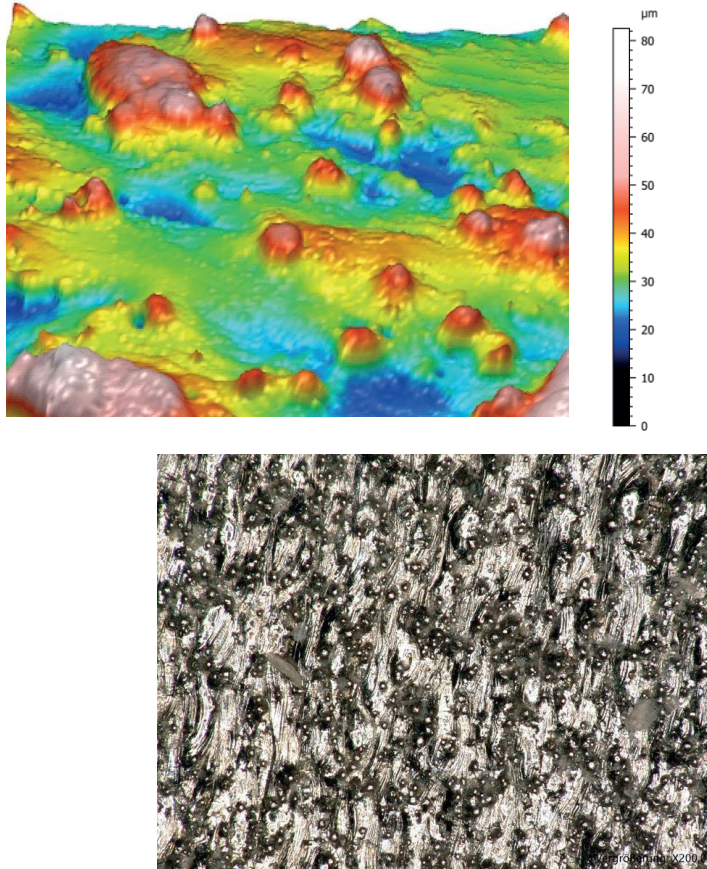


	Ra [μm]	Rz [μm]
Raw part	9,5	69
Post treatment	4,5	29,4
Change (%)	- 52,63	- 57,39

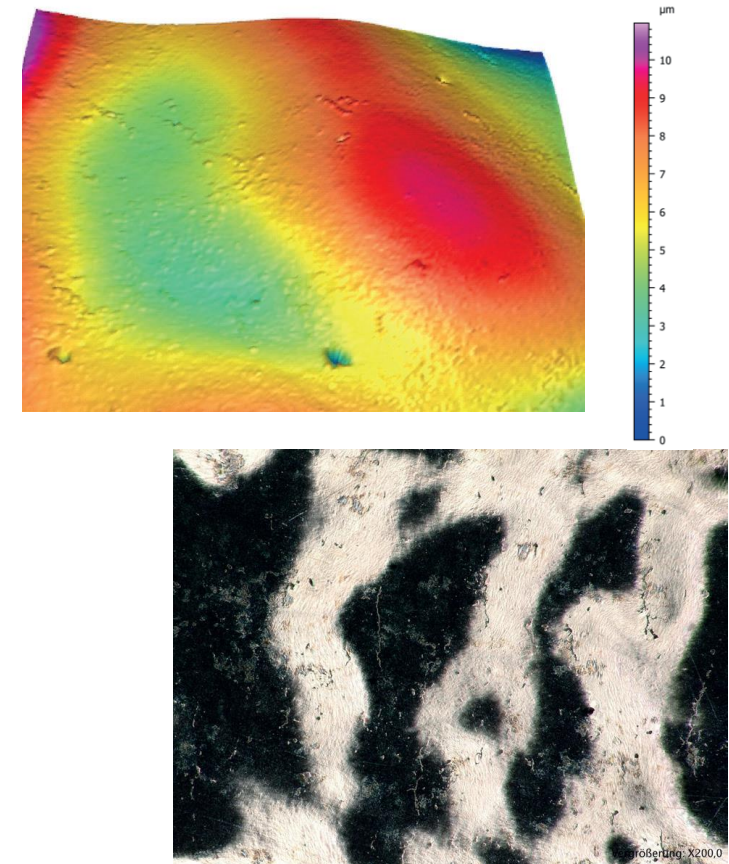
Process combination – Blasting + DryLyte



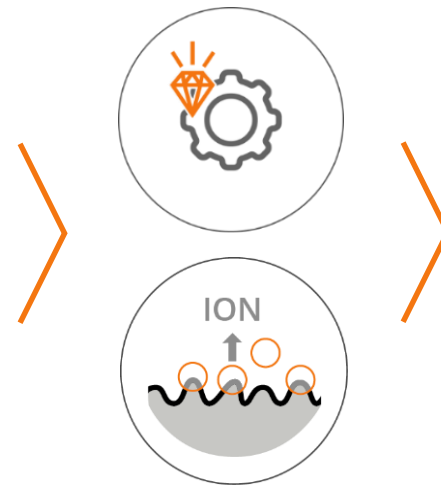
Process combination – Blasting + DryLyte



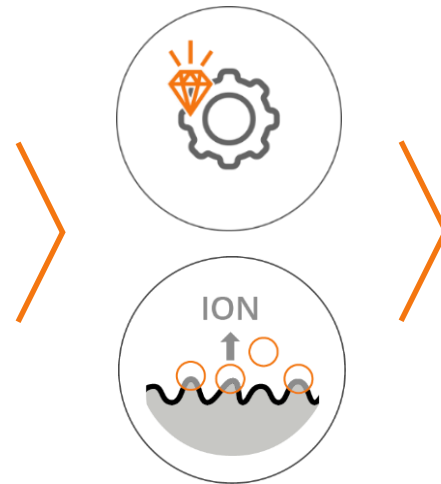
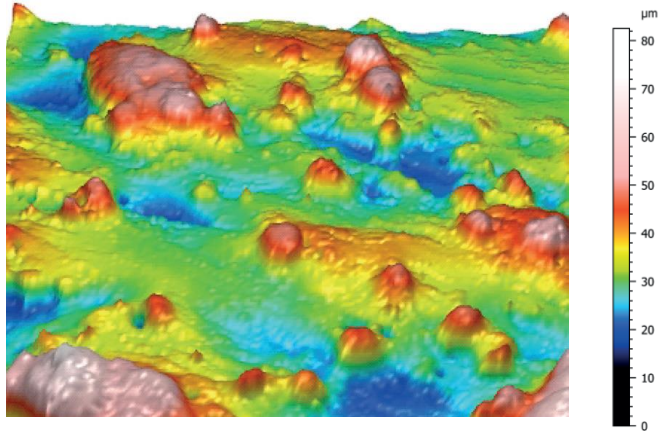
	Ra [μm]	Rz [μm]
Raw part	9,5	69
Post treatment	3,6	18,7
Change (%)	- 62,11	- 72,90



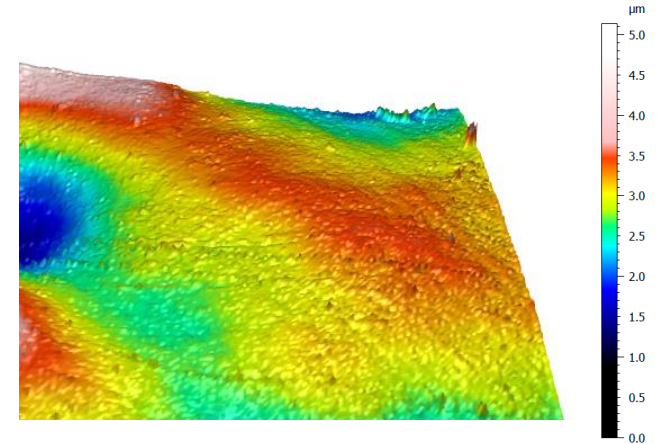
Process combination – Mass finishing + DryLyte



Process combination – Mass finishing + DryLyte

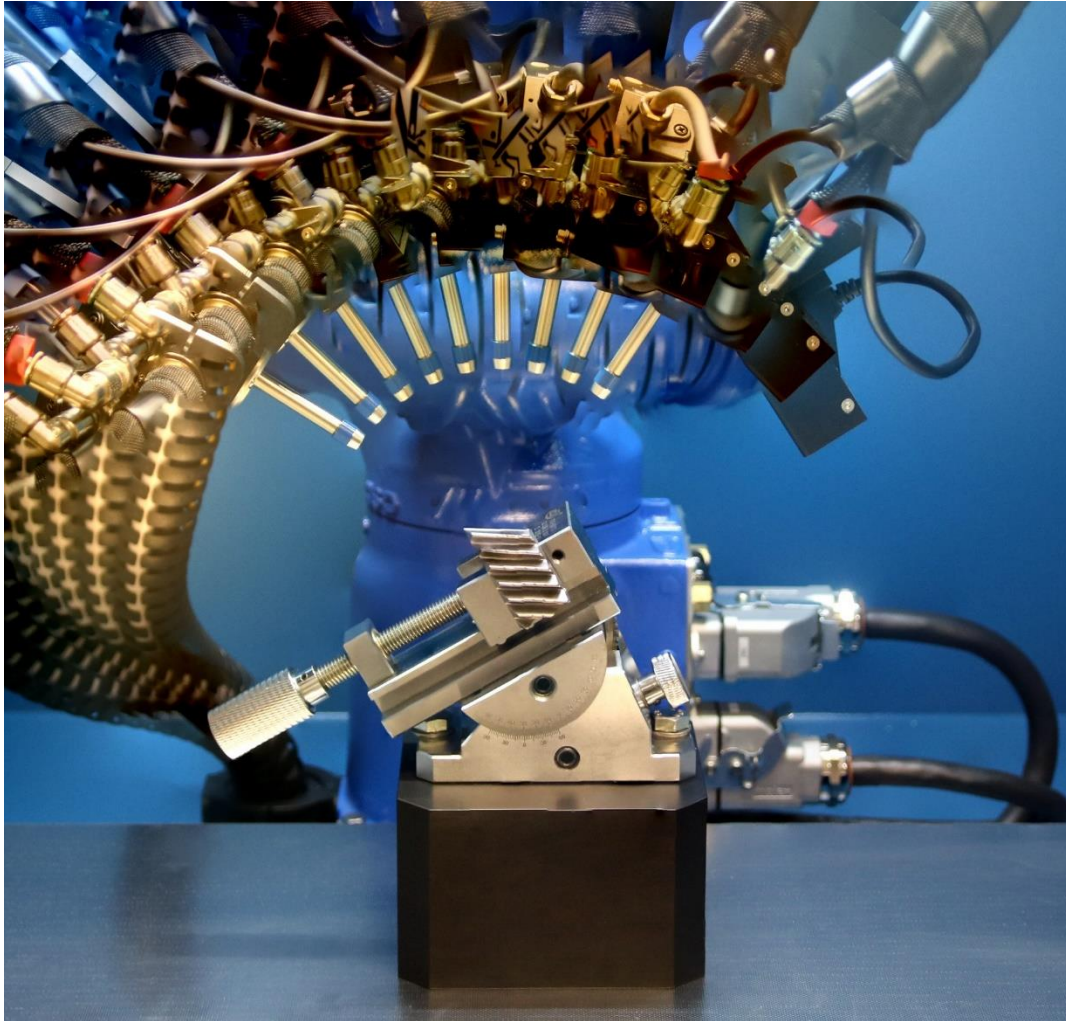


	Ra [μm]	Rz [μm]
Raw part	9,5	69
Post treatment	1,1	6,2
Change (%)	- 88,42	- 91,01



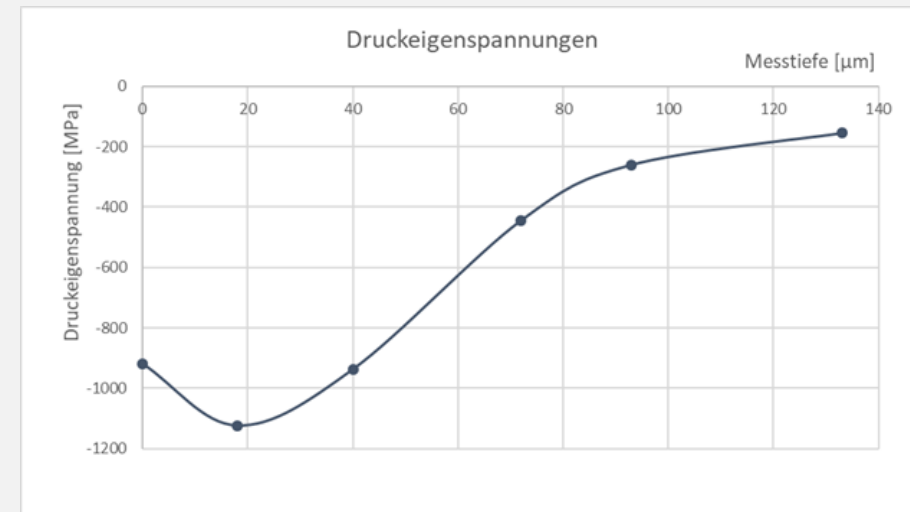
GPAINNOVA





Advantages of shot peening

- Weight reduction with the same stability (up to 30%)
- Increase in service life (up to a factor of 3)
- Increase in resistance and wear resistance
- Reduction of corrosion in the surface area



Customer Experience Center AM



- 400sqm of space
- Full process chain
- Metal and polymers
- 4 Printers
- Visual inspection with GOM, Microscope and Profilometer
- Location of “inside AM”

CEC GS and CEC STR





We are your contact for all areas related to process development & engineering. Besides to a large number of systems, we recommend suitable process equipment so that your processes run as well as possible.

Advantages of AM solutions

- Innovative, customer-oriented process development in the field of AM
- Technology for every step of post processing
- Specially developed finishing consumables for the treatment of AM components

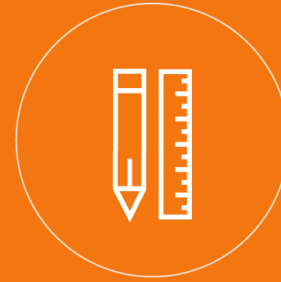
Interested? Get in contact with us!



rapid



precise



tailor-made



GPAINNOVA



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