



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



Valentin Schulz

- Projektleiter Vertrieb bei AM Solutions
- Seit 2019 für AM Solutions tätig
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 - 09533-924-9905

1. Vorstellung AM Solutions / Rösler
2. Technologie-Portfolio von AM Solutions
3. Anwendungsbeispiele
4. Anlagenportfolio AM Solutions
5. Anwendungsbeispiele Verfahrenskombinationen



Deutschland

- Vertrieb und Kundencenter
- Zentrale Produktion, Maschinenbau
Gleitschlifftechnik und Strahltechnik
- Customer Experience Center
 - Additive Fertigung
 - Gleitschlifftechnik
 - Strahltechnik
- AM Solutions
- Rösler Academy
- Labor
- Vollautomatisiertes Zentrallager
- Compound-Produktion
- Schleifkörperproduktion

Das weltweite Netz der Rösler Gruppe



Produktions- Standorte

- Deutschland
- Frankreich
- Italien
- Spanien
- USA
- Indien
- Türkei

Vertriebs-/Service Standorte

- Brasilien
- Großbritannien
- Österreich
- Niederlande
- Belgien
- China
- Rumänien
- Russland
- Serbien
- Schweiz

15 Tochterunternehmen und mehr als 150 Handelsvertreter weltweit

Zahlen, Daten und Fakten zur Rösler-Gruppe

+15.000
Verfahrensmittel



+25
Seminare

16
Niederlassungen
+150
Vertretungen weltweit



1.800
Mitarbeitende
weltweit



80.000 m²
Produktion
& Entwicklung
am Standort
Deutschland

Qualität
Made by Rösler



Automatisierung &
Digitalisierung

**Weltweite
Customer
Experience
Center**
Gleitschliff- und
Strahltechnik,
AM Solutions

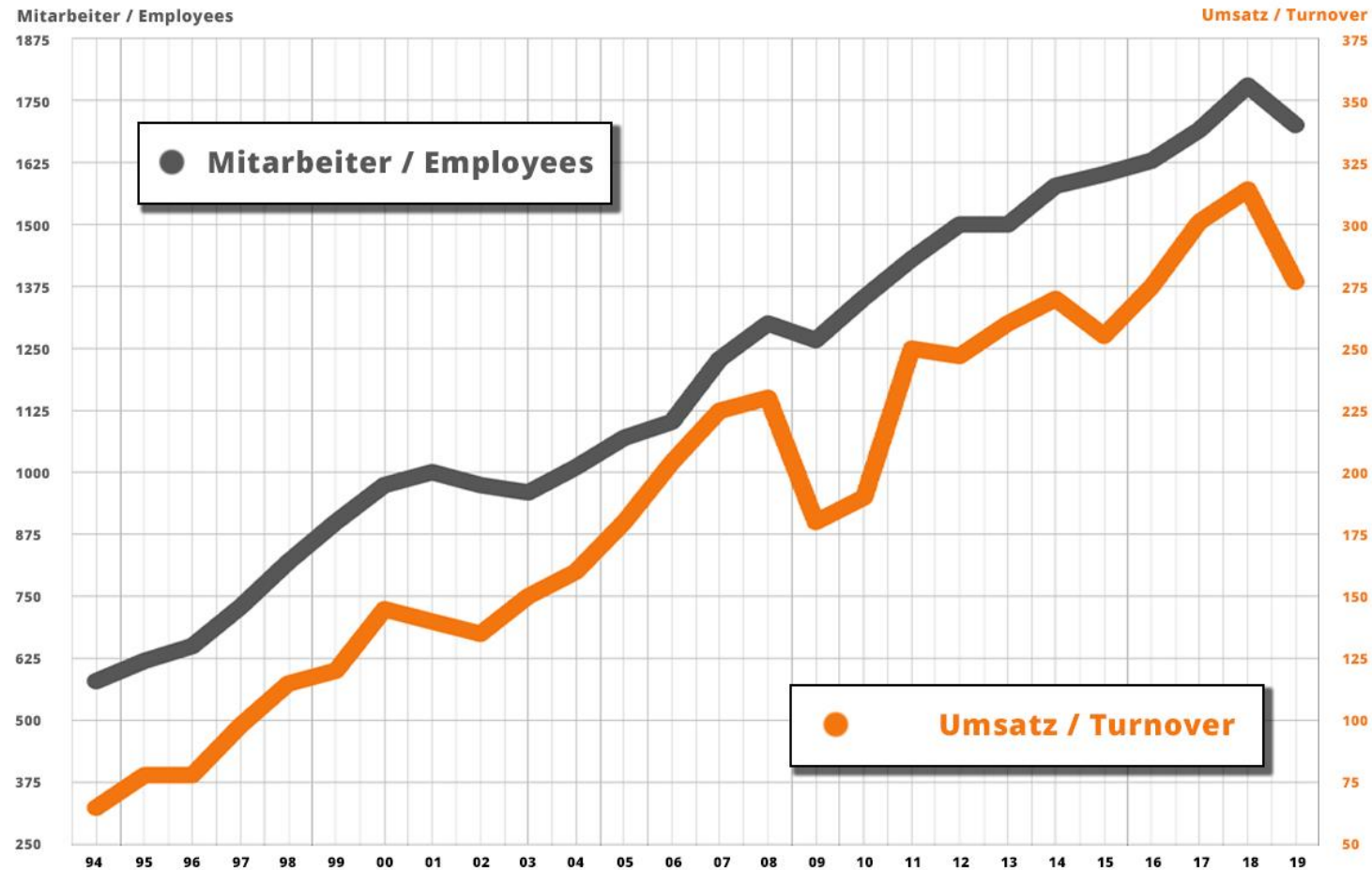
**+80
Jahre**
Branchen-
übergreifende
Erfahrung



24h
Service



277
Mio €
Umsatz

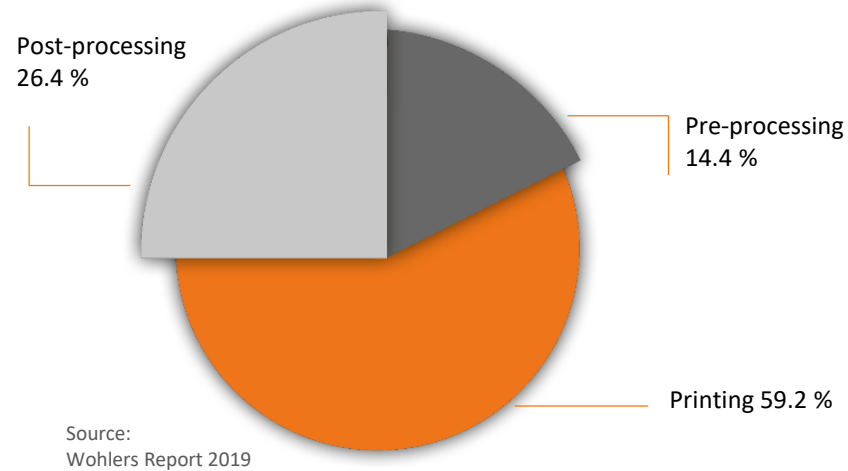


Umsatz Geschäftsjahr 19/20
Mitarbeiter Rösler Gruppe, weltweit

277 Mio. €
1.700

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

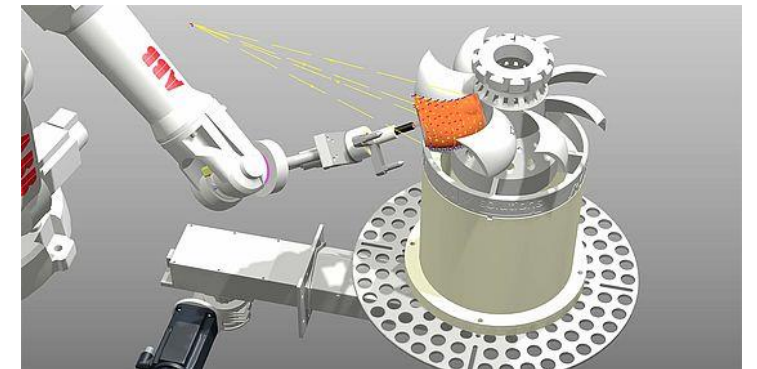
Kosten pro AM Bauteil



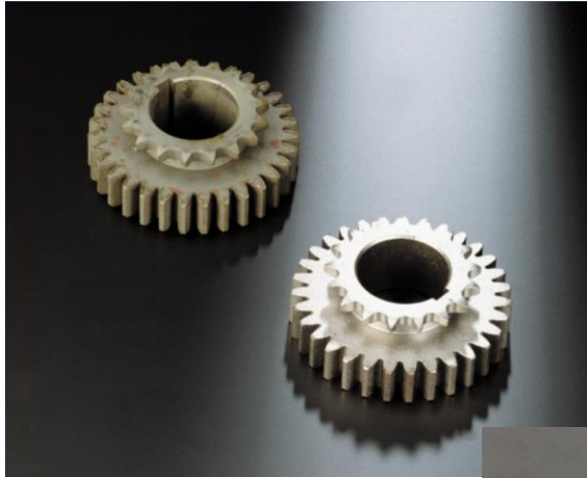
Manuelle Nachbearbeitung



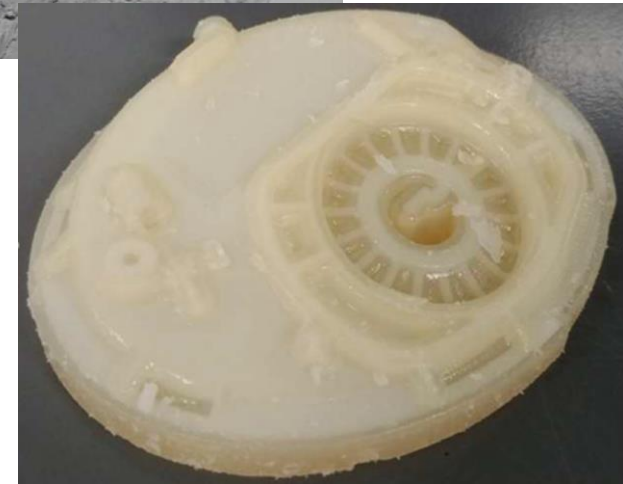
Automatisierte Nachbearbeitung



Erwartung



Realität





Manufacturing service partner

3D post processing technology

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

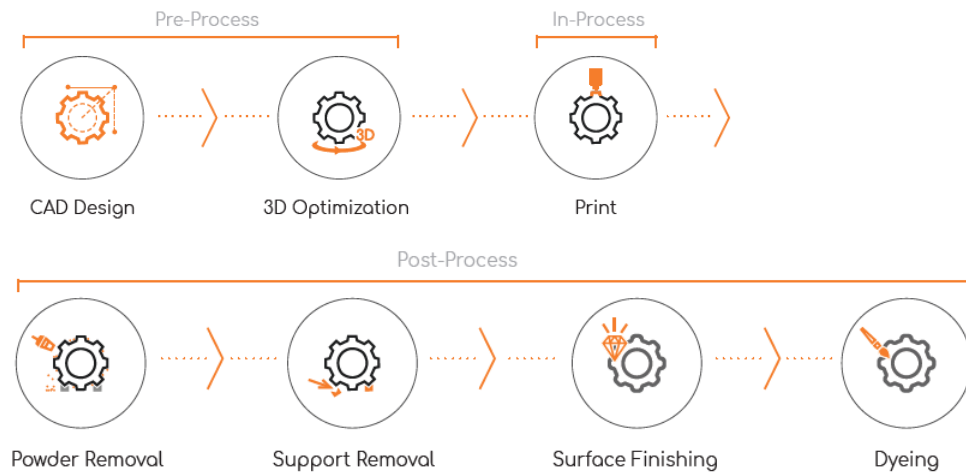
Development & sale of machines for the post processing of
additive manufactured parts

(Location: Italy)

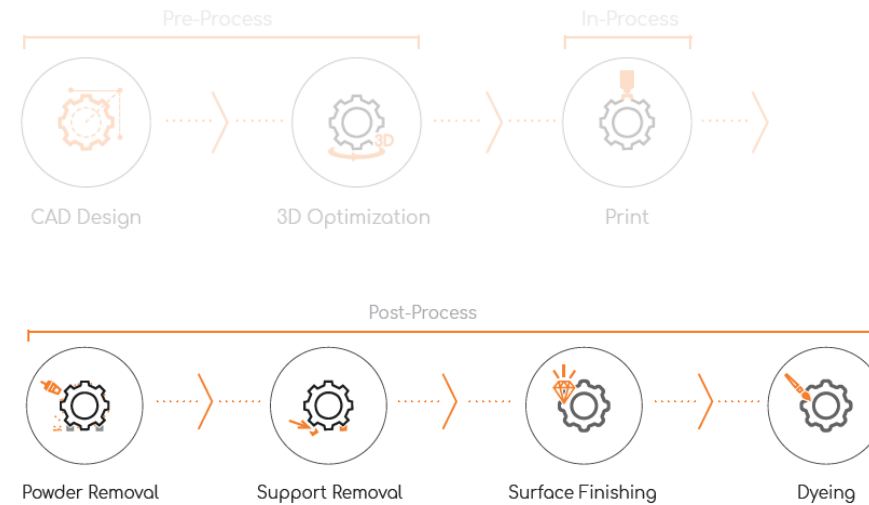
(Location: Germany)

AMsolutions

Manufacturing service partner



3D post processing technology



Technologie-Portfolio



Gleitschleifen



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





Verfahrensmittel

- Entwicklung und Produktion seit über 60 Jahren
- Compounds (Reinigungschemikalien)
- 15.000 verschiedene Typen Schleifkörper (Chips)
- Einzigartiges Verfahrensmittelprogramm
- an Vielfalt und Qualität unübertroffen
- Verarbeitung ausschließlich umweltverträglicher Rohstoffe
- Hohe ökologische Anforderungen

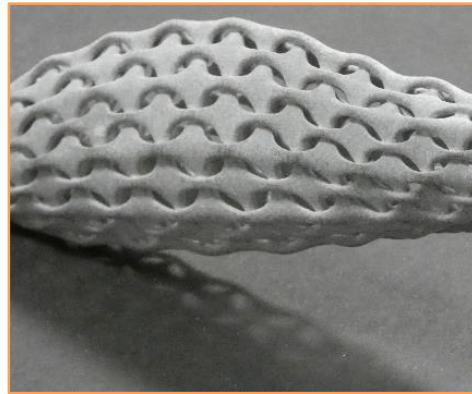
Gemische und patentierte Präzisionswerkzeuge

- Optimiert für Kunststoffe
- Neue Materialien in Entwicklung
- Für breites Geometriespektrum einsetzbar

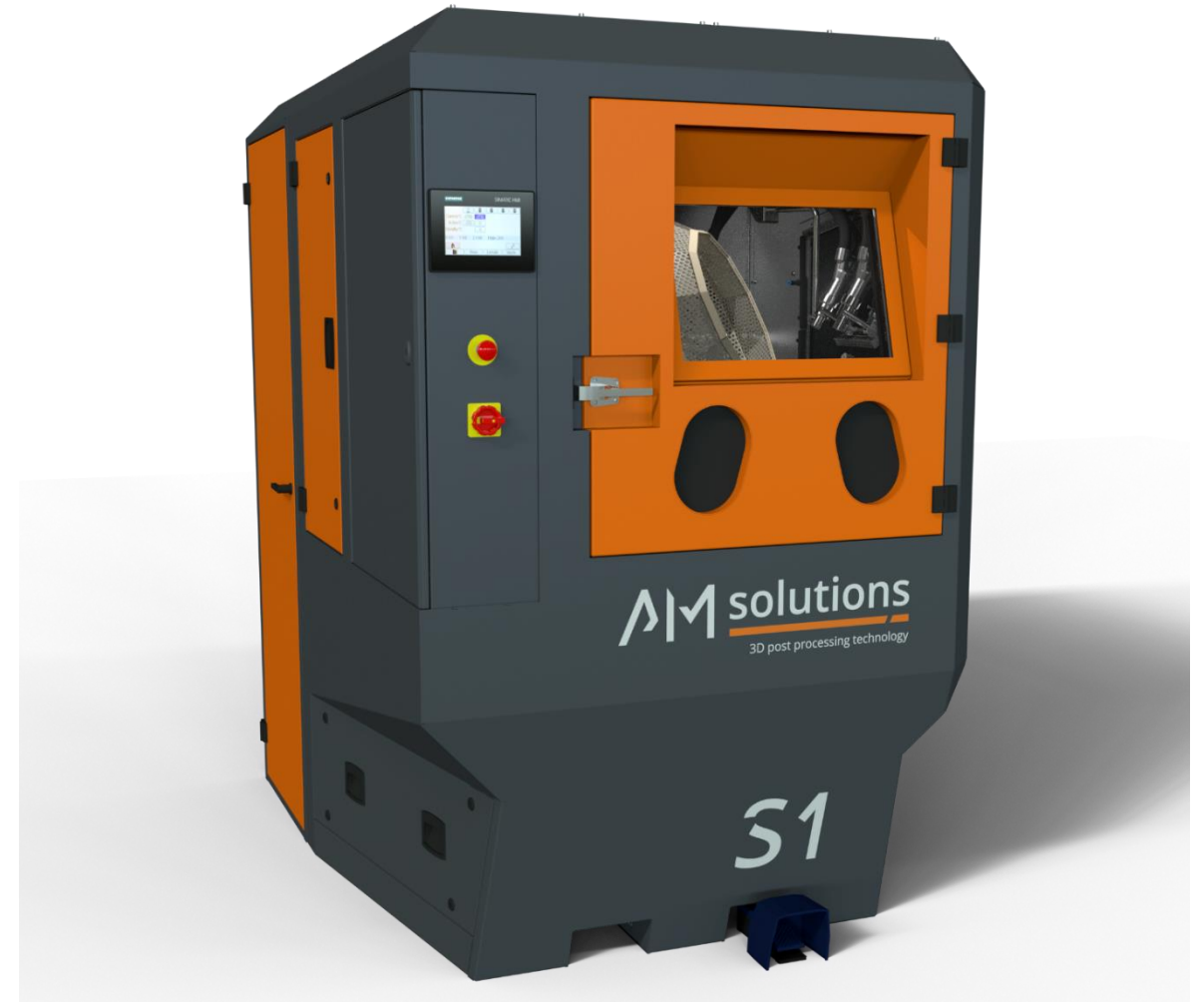




Strahlen



- Entpulverung & Reinigung
 - Oberflächenfinish
 - Glätten & Homogenisieren
 - Aufrauen
 - Mattieren
 - Shot-Peening

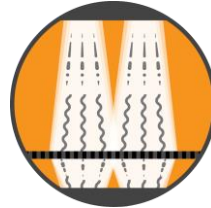




Submersed Vortex Cavitation



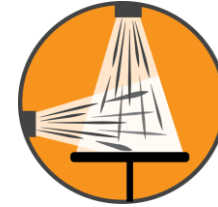
- Support removal
Polyjet / SLA



Volumetric Velocity Dispersion



- Support removal
FDM / FFF

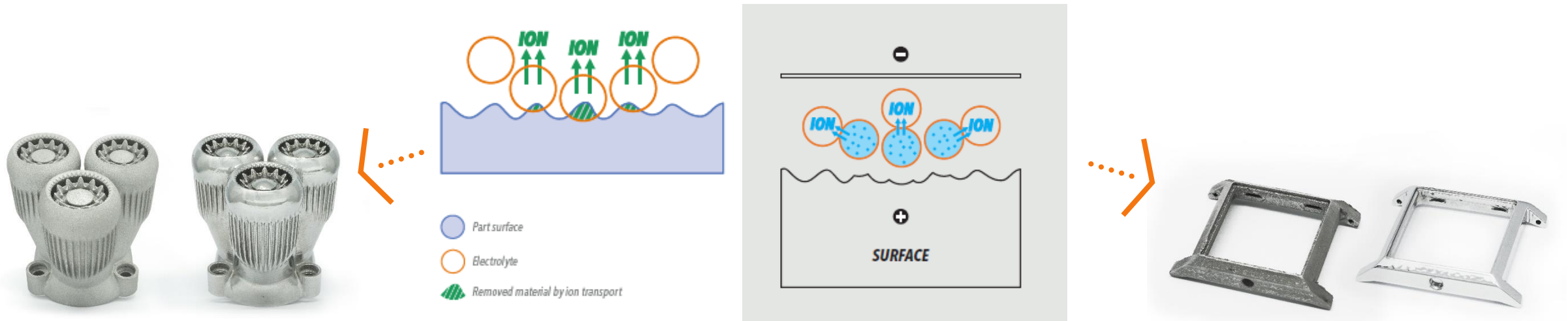


Thermal Atomized Fusillade



- Powder removal
- Surface finishing

GPAINNOVA– DryLyte process



- Take tolerances into account and maintain original shape
- $R_a < 0,09$ 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*

Anwendungsbeispiele



Auspacken von Kunststoffteilen

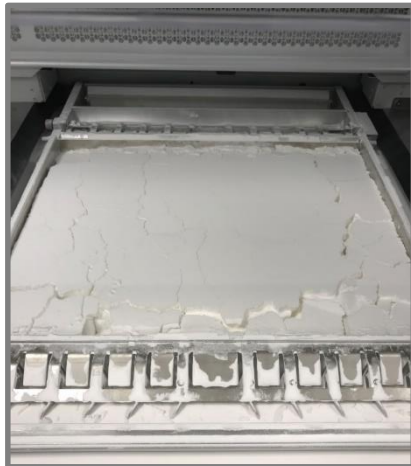


Bearbeitungszeit: **0:14h**

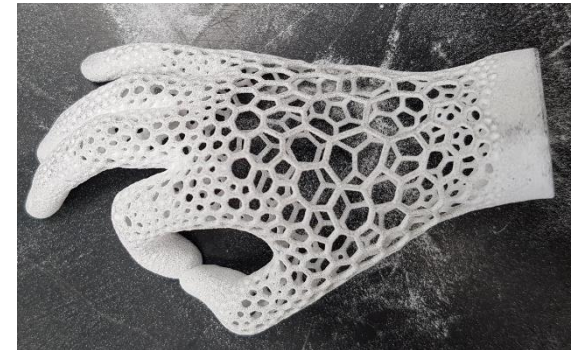
Beladen: **0:02h**

Bearbeitung: **0:10h**

Entnahme: **0:02h**



Entpackte Teile



Wiederverwendbares
Pulver



Entpulvern von Kunststoffteilen S1

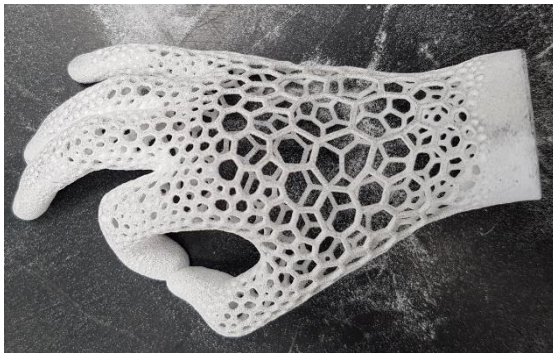


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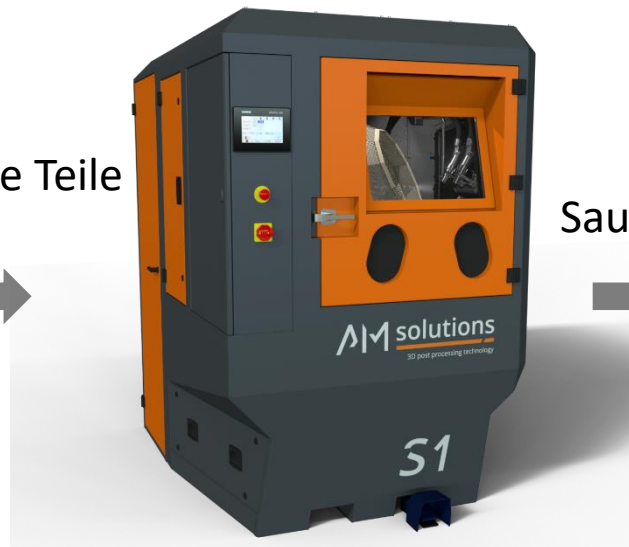
Beladen: **0:01h**

Bearbeitung: **0:10h**

Entnahme: **0:05h**



Entpulverte Teile



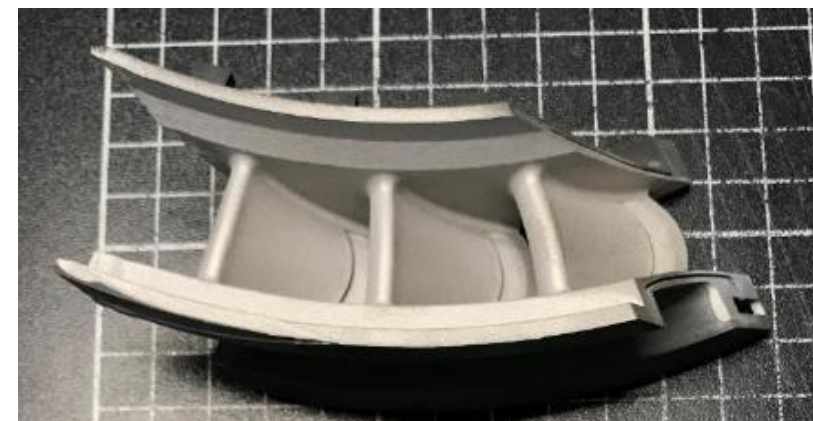
Saubere Teile



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

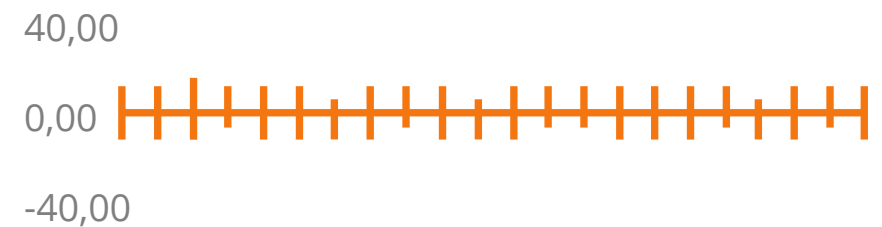
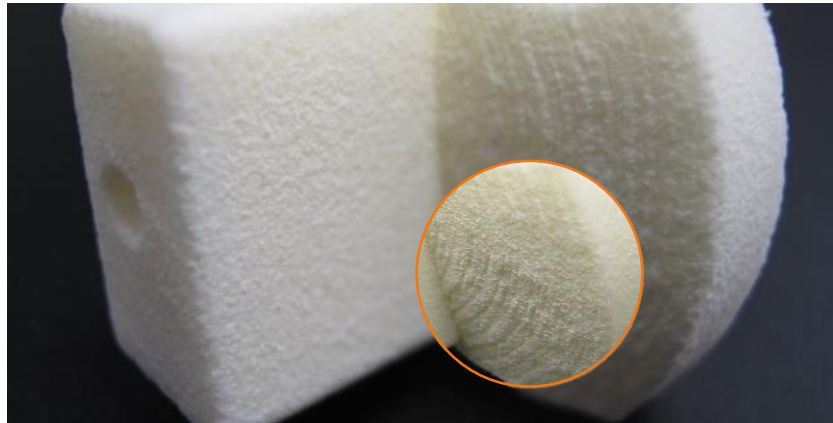
Treatment purpose

- 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

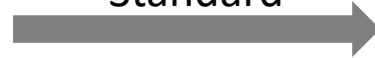
Post Processing of powder bed based printing processes for plastics - cleaning





Ausgangssituation

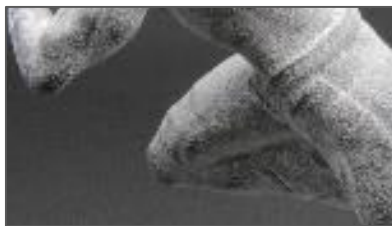
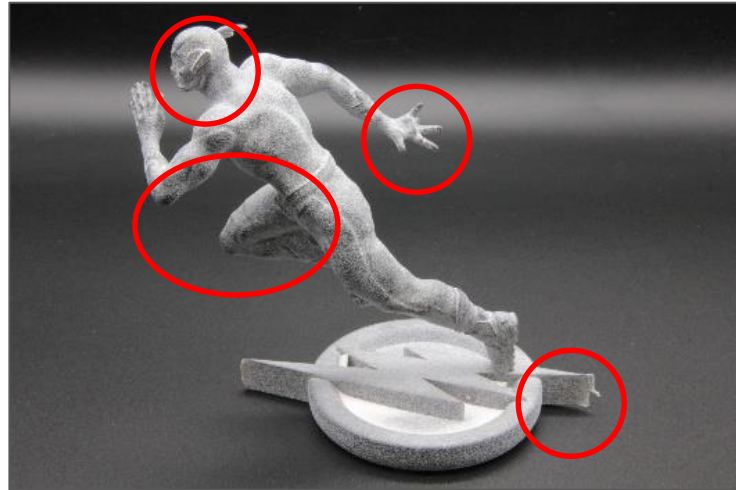
Standard



AM Solutions
Technology



Bearbeitung von filigranen Details

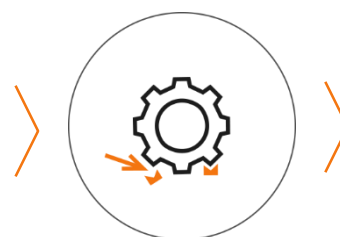


Support Removal with PPT DEMI

Manual Support Removal:
Technician Time per Part:
2 Minutes

Technician Time per Batch:
400 Minutes

Total Process Time.
400 Minutes



Support removal



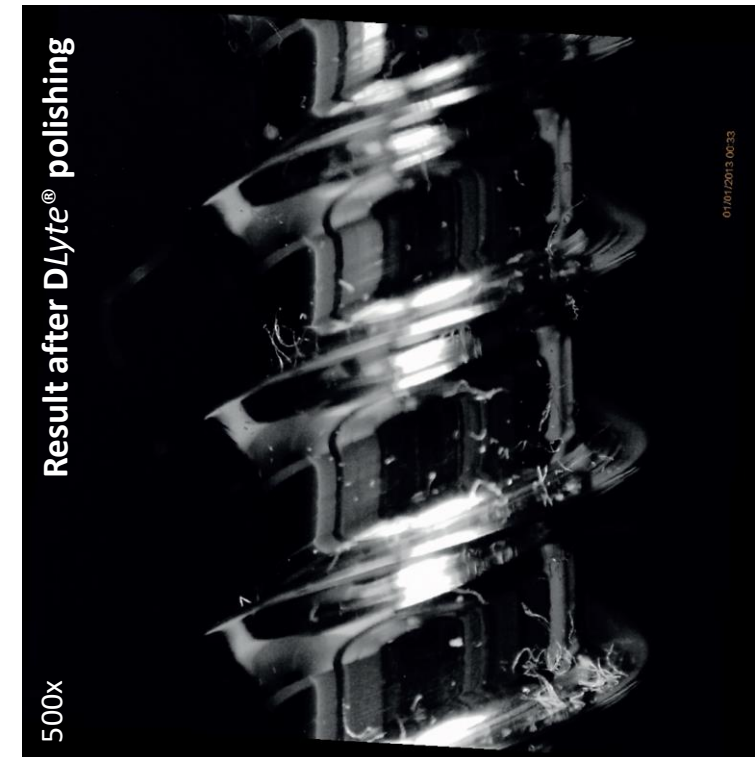
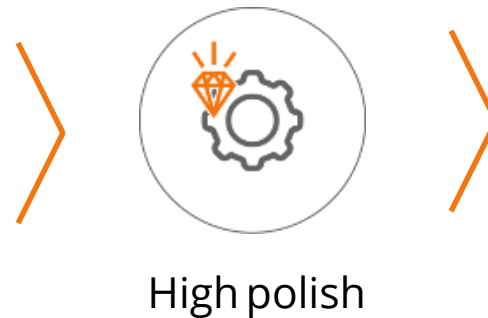
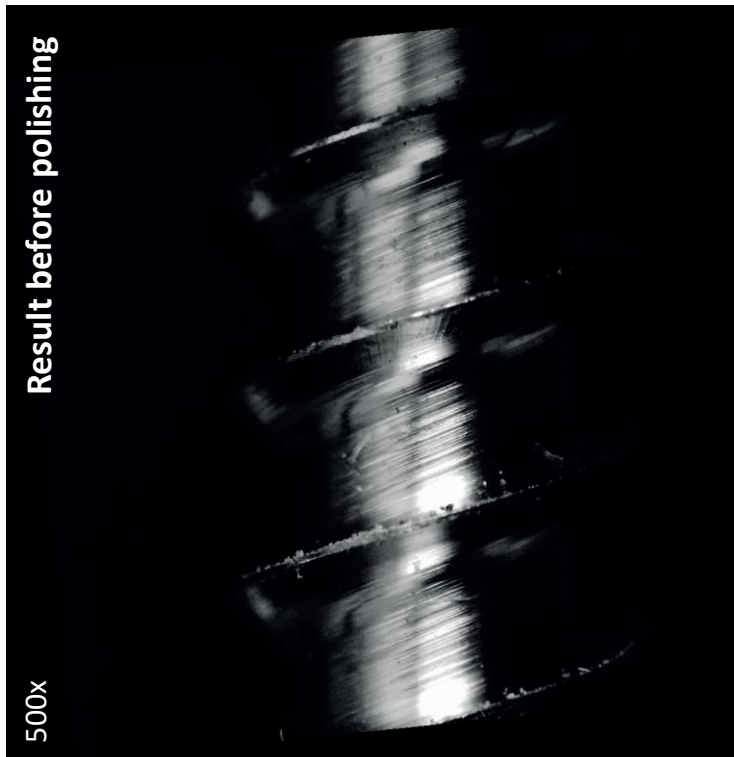
Automated Support
Removal:
Technician Time per Part:
0,025 Minutes

Technician Time per Batch:
5 Minutes

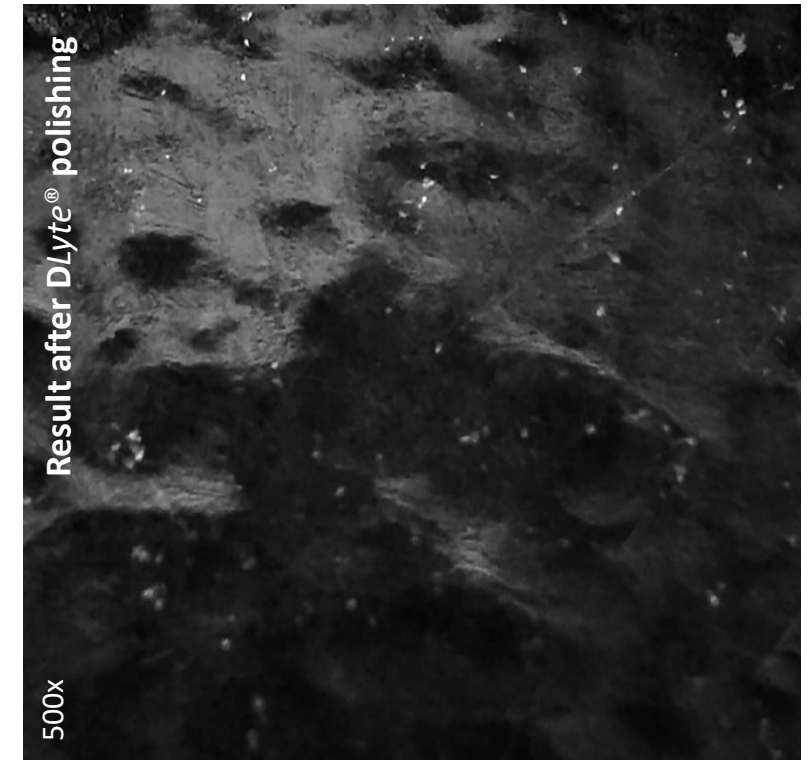
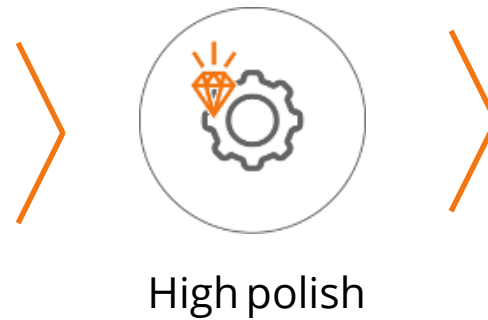
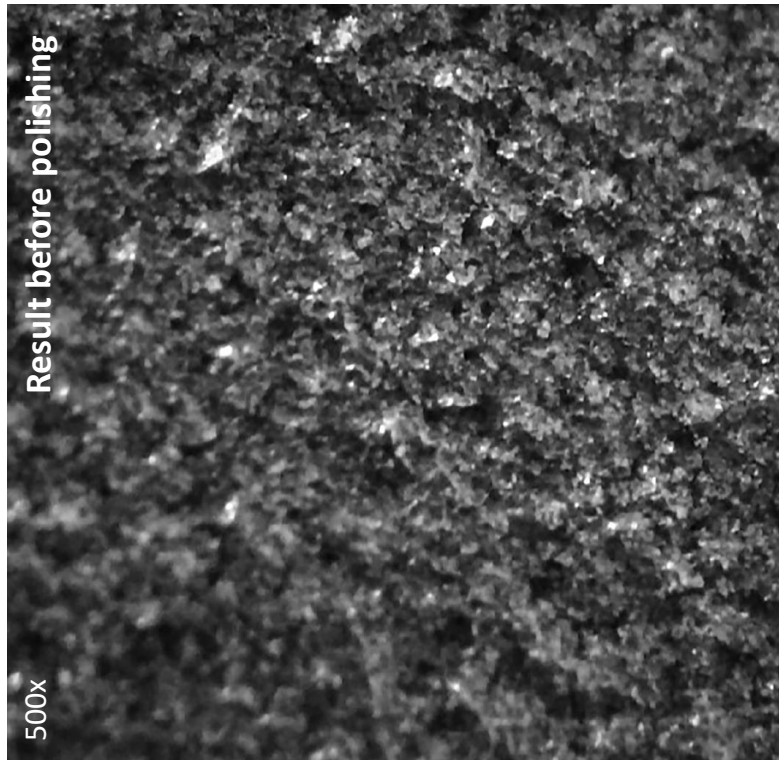
Automated Process Time
240 Minutes

Total Process Time
245 Minutes

Post Processing with DryLite of milled metallic parts



Post Processing with DryLite of AM metallic parts



Anlagen-Portfolio

M1



Surface finishing

Plastic

Metal

M2

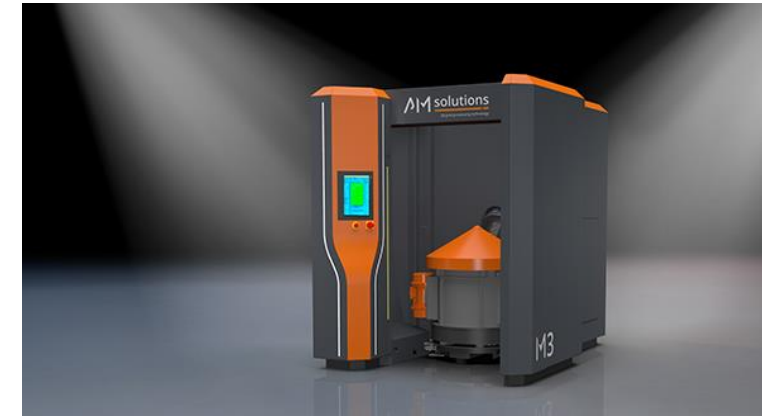


Surface finishing

Plastic

Metal

M3



Surface finishing

Plastic

Metal

AM Solutions S-Line

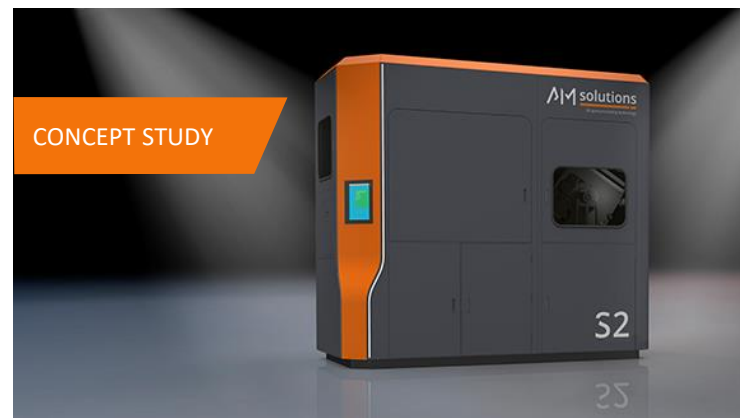


S1



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



S3 wet

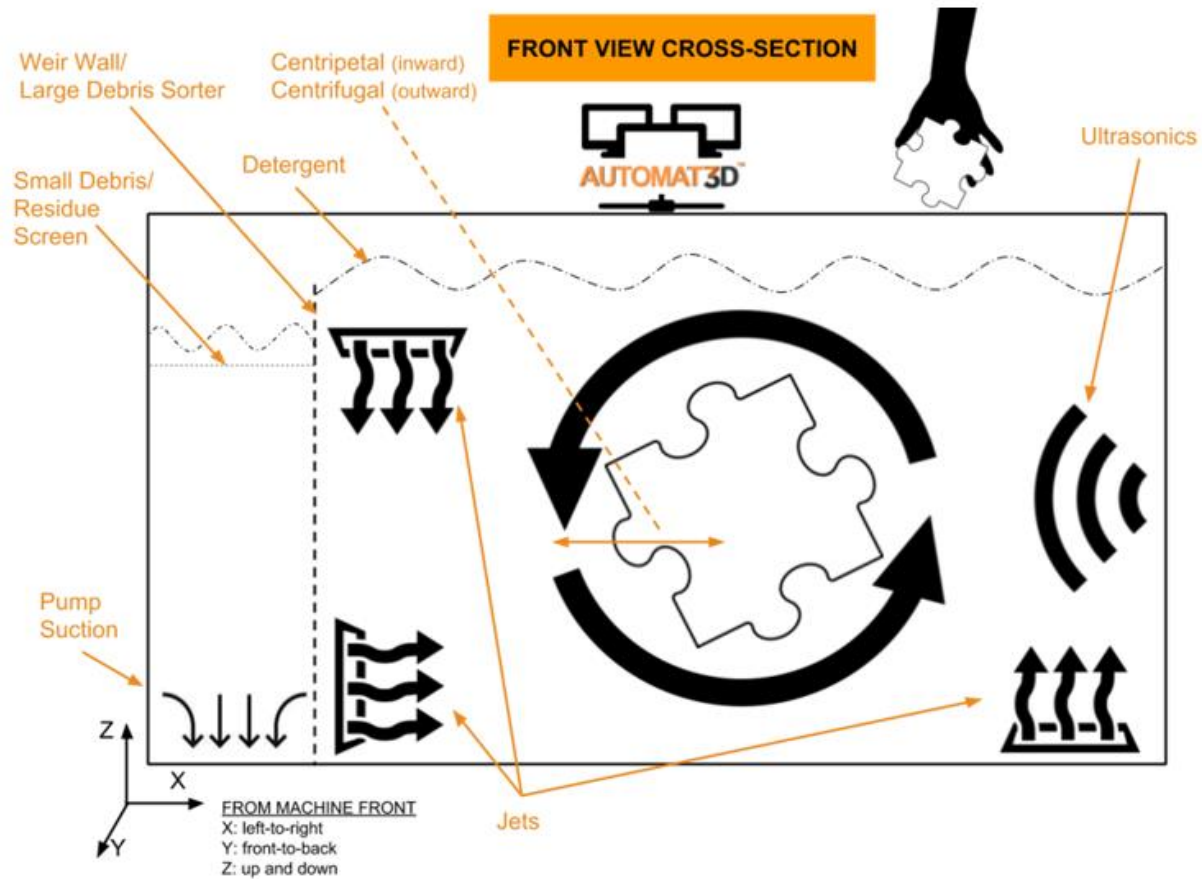


3D Automatic Unpacking Station (HP)



- Industrieller Lösungsansatz
- Automatischer (mannloser) Betrieb
- Reproduzierbare Ergebnisse
- Ideal für kleine – mittlere Teilegeometrien
- Einfache Prozessanpassung
- Optimierte Schnittstelle (Übergabe)
- Prozessdauer < 30 Minuten
- Remote Monitoring und Data Tracking

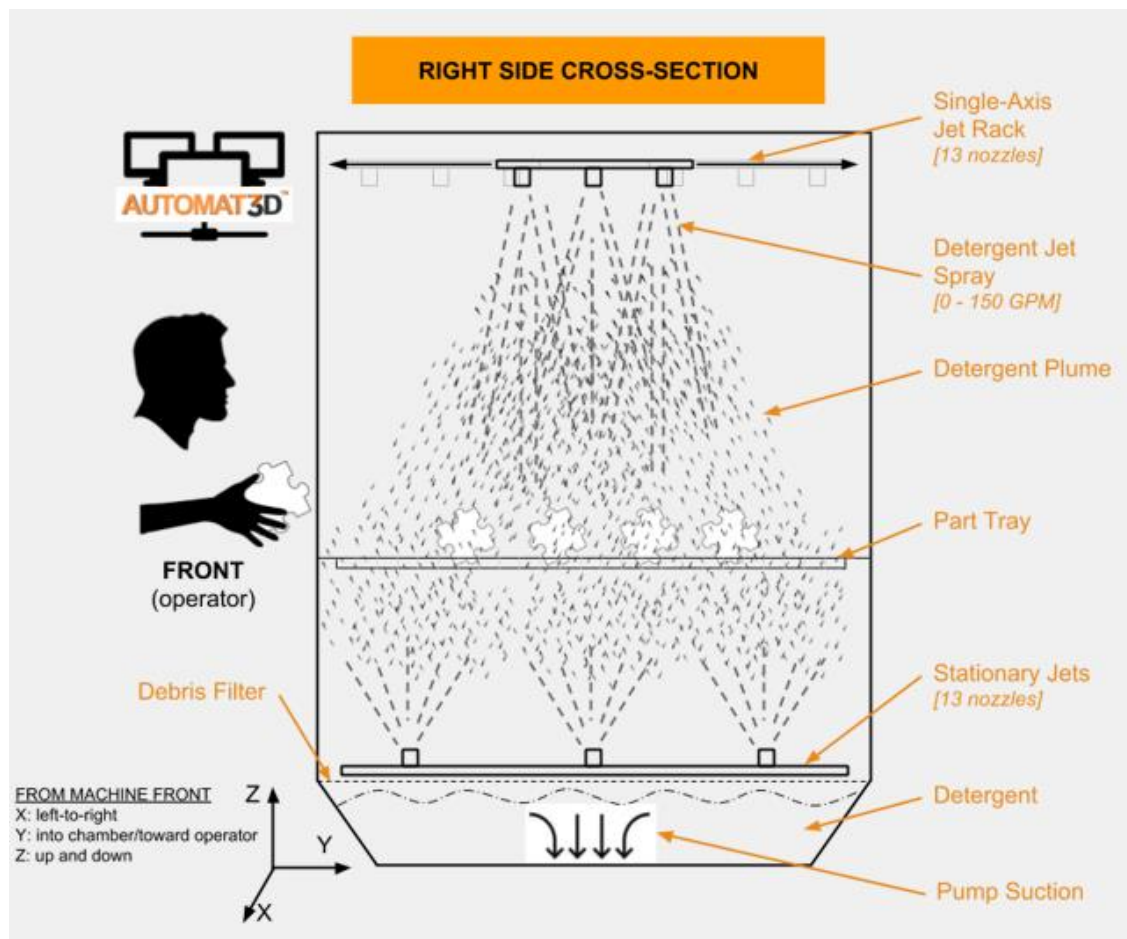
Submersed Vortex Cavitation



DEMI Serie



Volumetric Velocity Dispersion



DECI

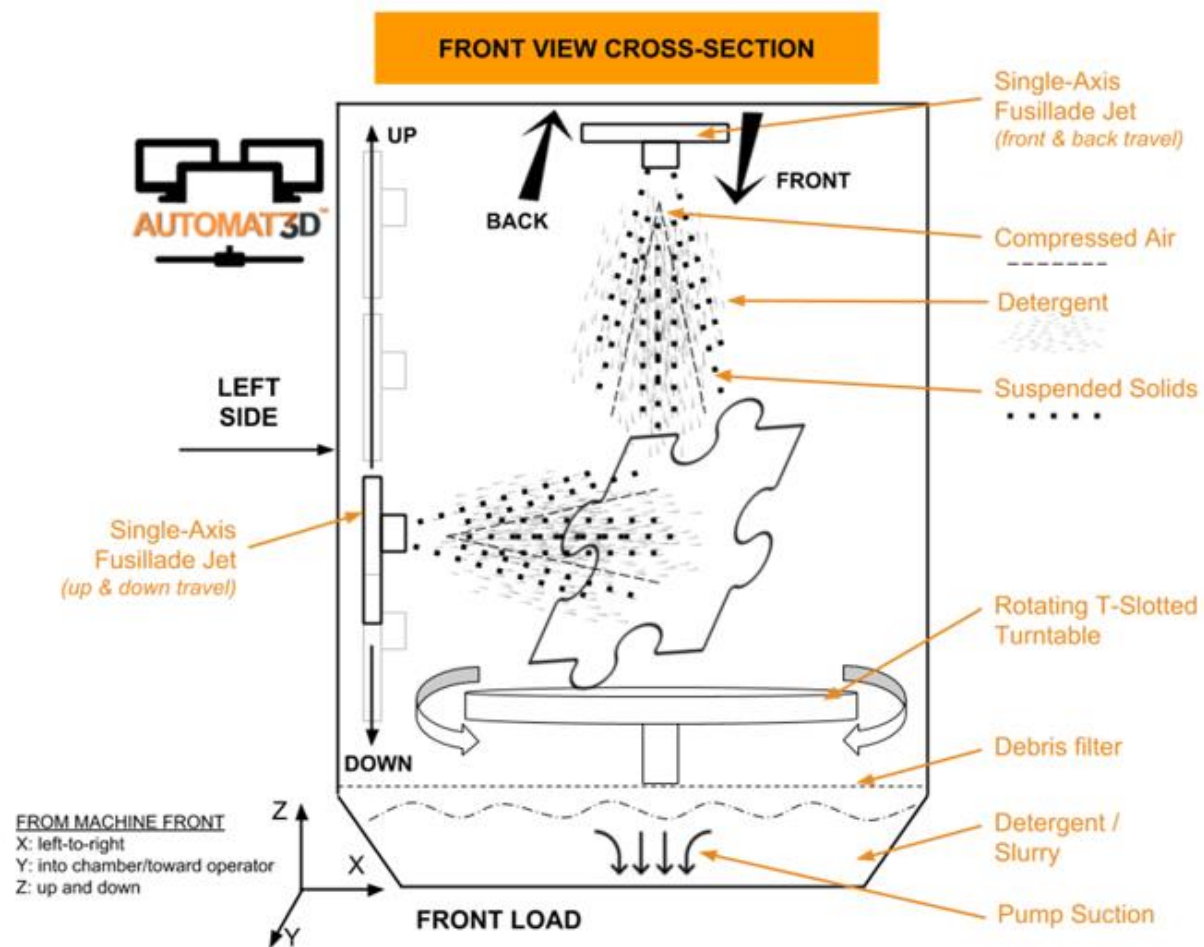


BASE



Thermal Atomized Fusillade

DECI DUO



DLyte1I



Workpiece capacity
Ø75 mm x 50 mm

DLyte10I



Workpiece capacity
Ø120 mm x 50 mm

DLyte100I



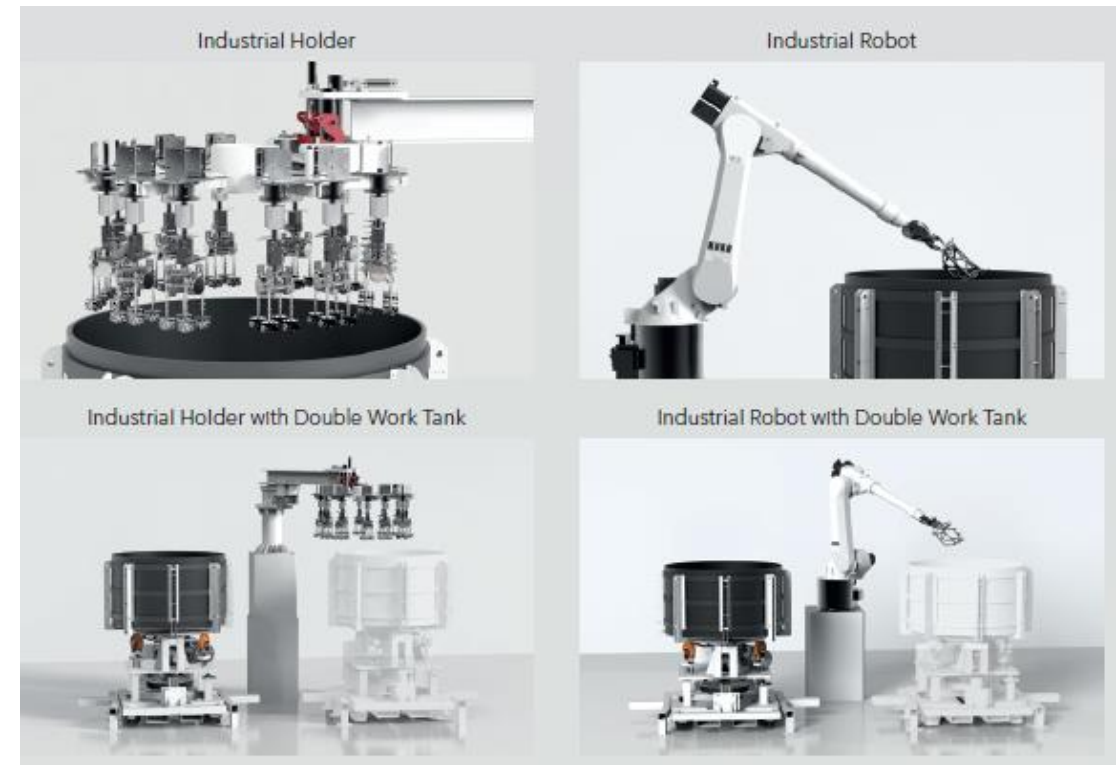
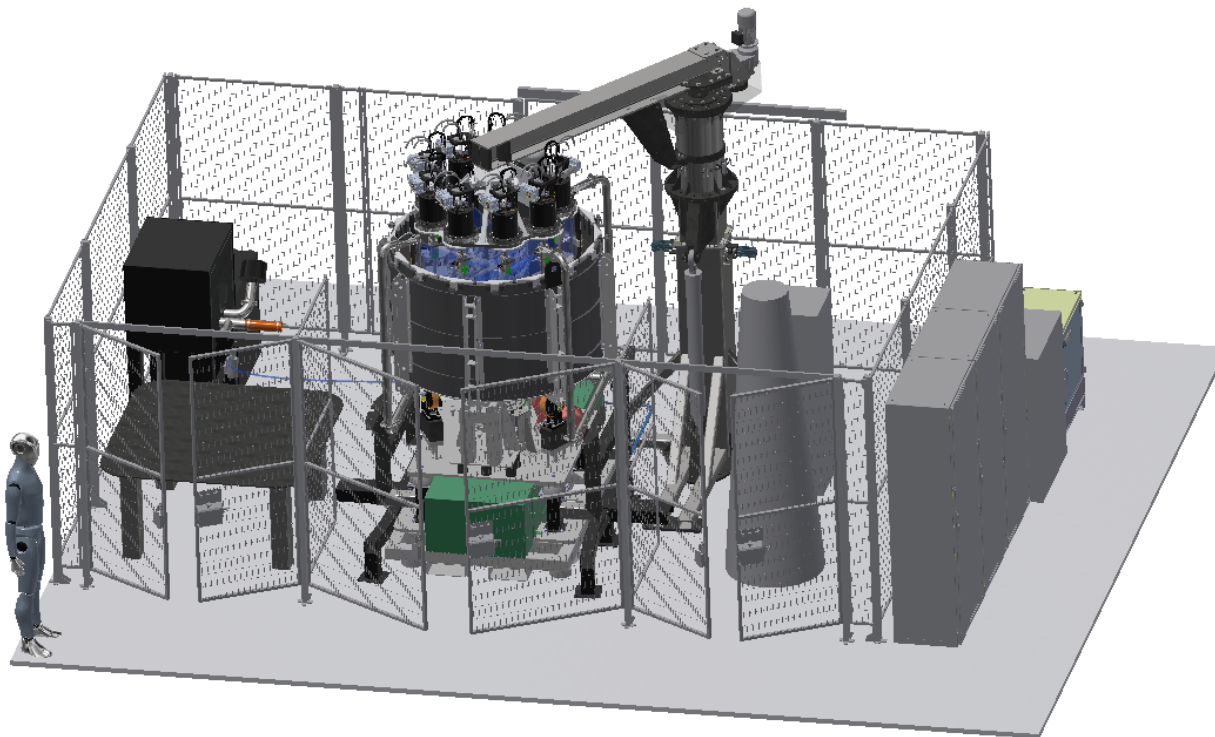
Workpiece capacity
Ø180 mm x 80 mm

DLyte PRO500



Workpiece capacity
Ø700 mm x 250 mm

Modular solution for series production



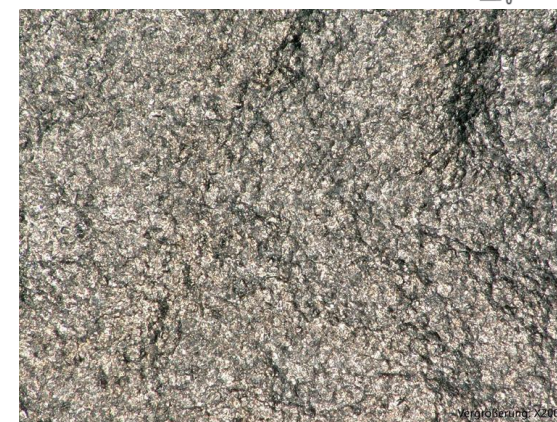
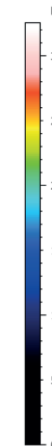
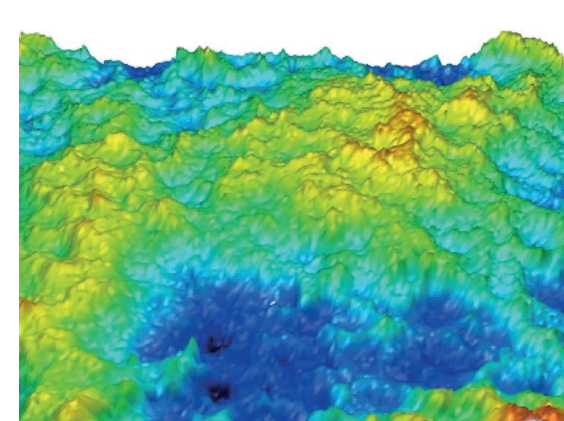
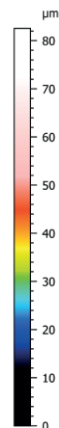
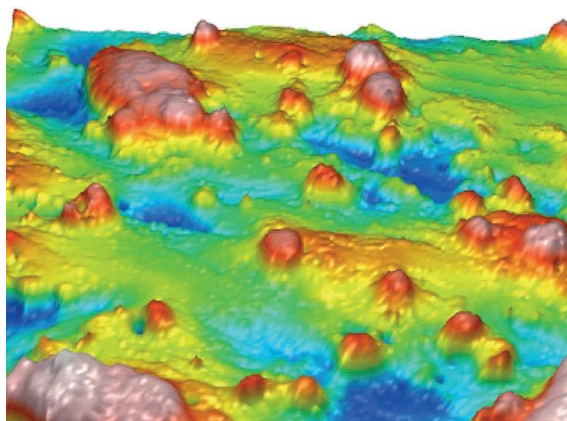
Anwendungsbeispiele Verfahrenskombinationen

Starting Conditions

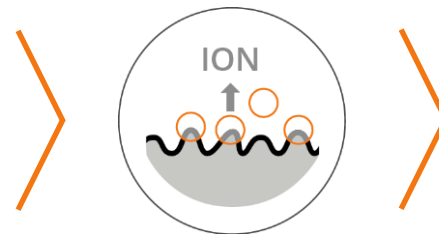
- Material: 316L
- Printed EOS M290
- Appearance
 - Matt finish, as printed
 - Powder removed
 - Support removed
- Surface Conditions:
 - $R_a = \sim 10 \mu\text{m}$
 - $R_z = \sim 70 \mu\text{m}$

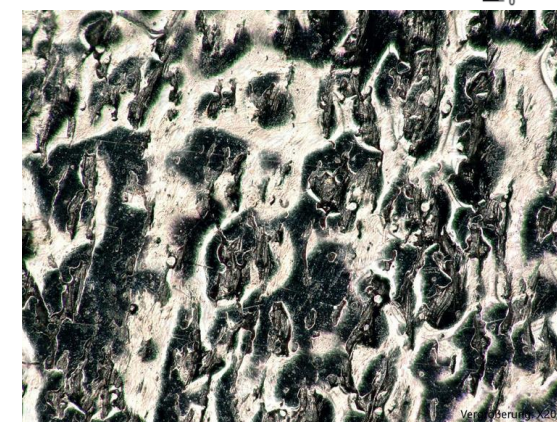
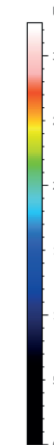
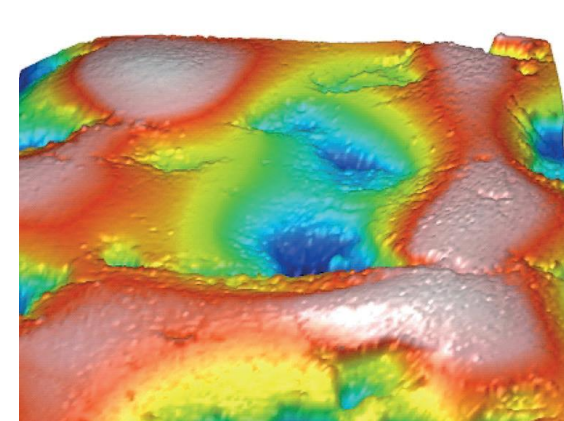
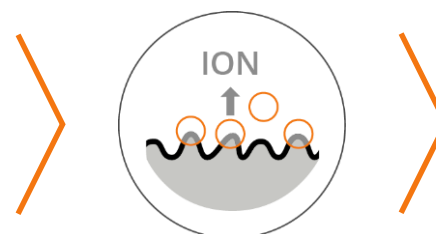
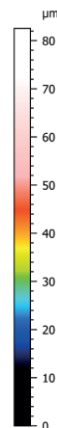
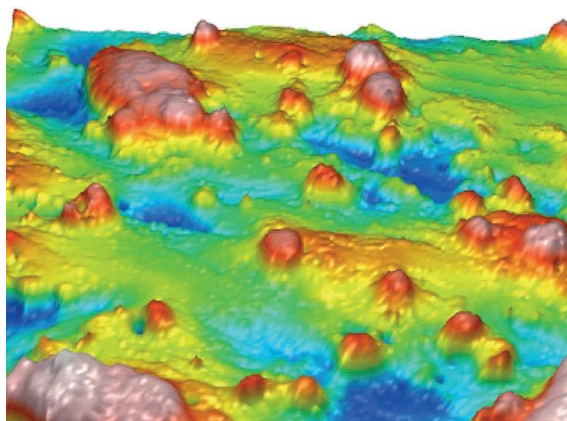






Werkstück	Ra [µm]	Rz [µm]
Rohteil	9,5	69
nach Bearbeitung	6,0	34,5
Veränderung (%)	- 36,84	- 50

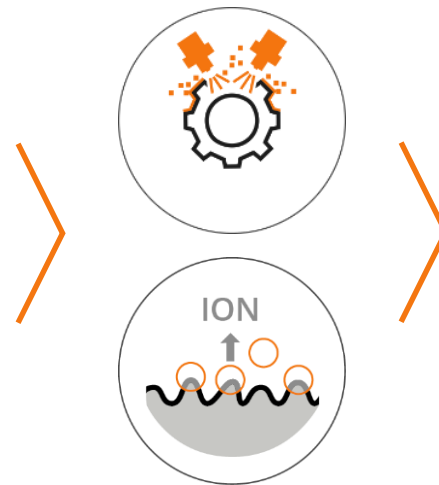




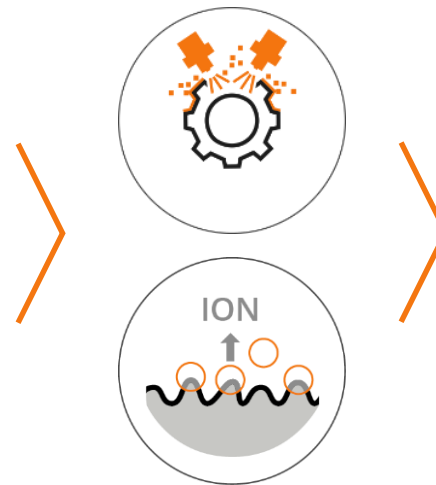
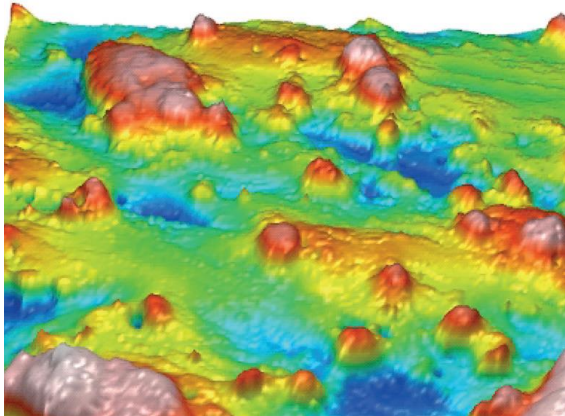
Werkstück	Ra [µm]	Rz [µm]
Rohteil	9,5	69
nach Bearbeitung	4,5	29,4
Veränderung (%)	- 52,63	- 57,39

GPA INNOVA

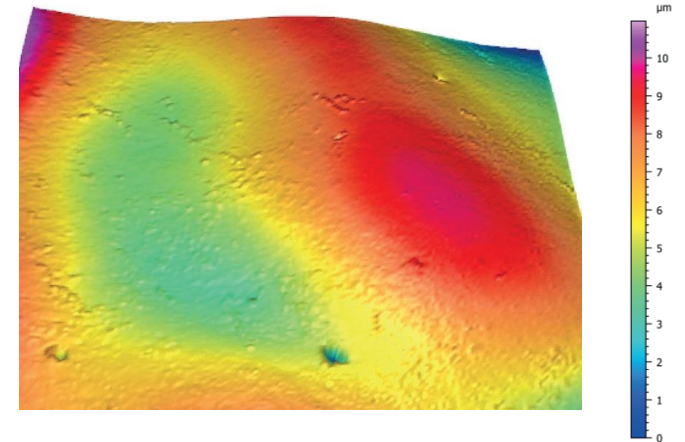




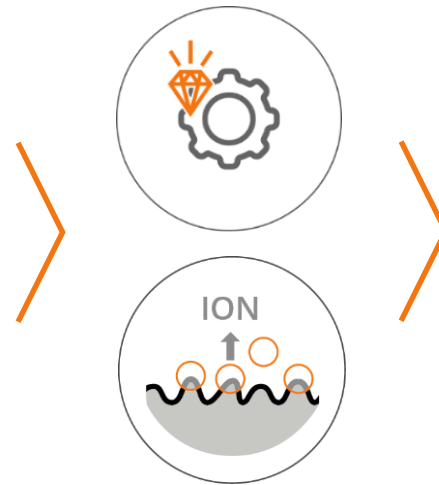
Prozesskombination – Strahlen + DryLyte



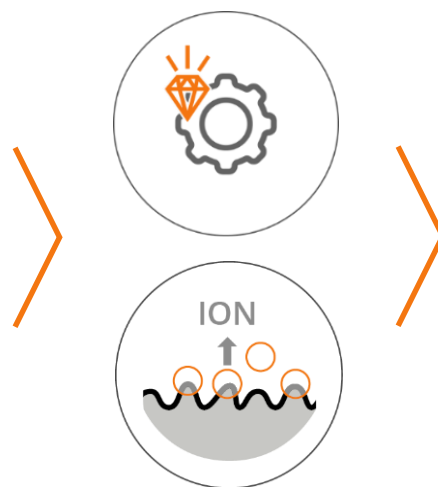
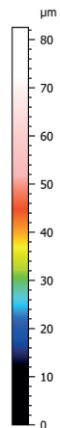
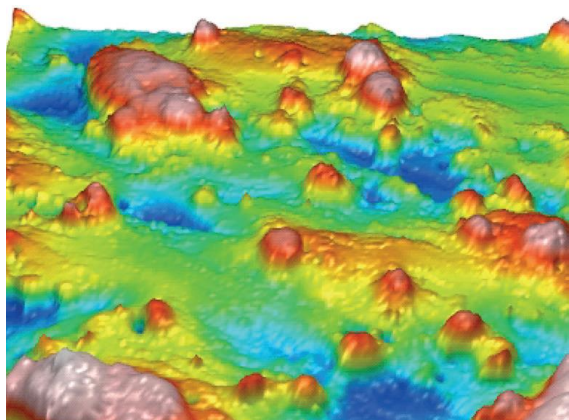
Werkstück	Ra [µm]	Rz [µm]
Rohteil	9,5	69
nach Bearbeitung	3,6	18,7
Veränderung (%)	- 62,11	- 72,90



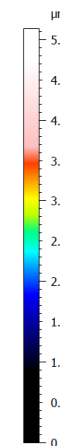
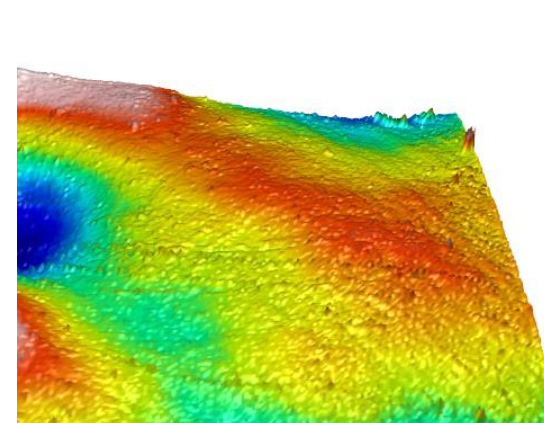
Prozesskombination – Gleitschleifen + DryLyte



Prozesskombination – Gleitschleifen + DryLyte



Werkstück	Ra [µm]	Rz [µm]
Rohteil	9,5	69
nach Bearbeitung	1,1	6,2
Veränderung (%)	- 88,42	- 91,01



GPA INNOVA



Neues Testzentrum AM



- 400 m² Testzentrum
- Vollständige Prozesskette
- Metall und Kunststoffe
- 4 Druckverfahren
- Optische Kontrolle mit GOM, Mikroskop und Profilometer
- Vollständiges Post Process Equipment





Wir sind Ihr Kontakt für das Post Processing von additiven Bauteilen – von der Verfahrensfestlegung bis zur Prozessentwicklung. Aus der Vielzahl an Möglichkeiten empfehlen wir das Beste für Ihren Anwendungsfall.

Vorteile von AM solutions

- Innovative, kundenorientierte Prozessentwicklung im Bereich der Additiven Fertigung
- Technologie für jeden Schritt des Post Processing
- Speziell entwickelte Verfahrensmittel für die Bearbeitung additiv gefertigter Komponenten

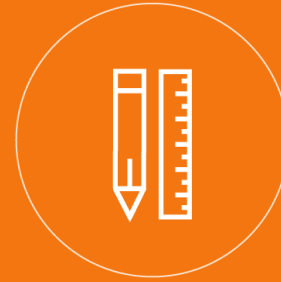
Interested? Get in contact with us!



rapid



precise



tailor-made



GPAINNOVA



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