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Your partner for components made  
by additive manufacturing

# 3D printing services, high quality post processing and surface finishing from one single source

The ideal solution for every stage in the AM process

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of the Rösler Group 3

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Excellent and tailor made - solutions for all stages of the 3D printing process

Lightweight characteristics, easy integration of complex functions and fast production of extremely complex, individualized components without requiring expensive tooling - it is with advantages like these that additive manufacturing (AM), also called 3D printing, has been establishing itself as the manufacturing technology of the future across many industries. AM Solutions, a brand of the Rösler Group, will support you with the development and implementation of innovative, optimized 3D printed products with a unique, highly flexible solutions package covering the entire process chain.

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**AM Solutions - 3D printing services** is your competent partner for expert consultation, AM suitable component designs, the actual printing of your components, post processing, surface finishing as well as quality control. With us your AM project will be a success!

**AM Solutions - 3D post processing** offers equipment solutions for any post processing challenges irrespective of the print method and the component material. Our cooperation with numerous industrial partners, universities and research facilities ensures the continuous improvement of our products and services so that our customers can always count on getting the latest technology!

Whenever you have an additive manufacturing project – AM Solutions is there to assist you!

## 3D printing services

– all the way from the design phase  
to the finished product

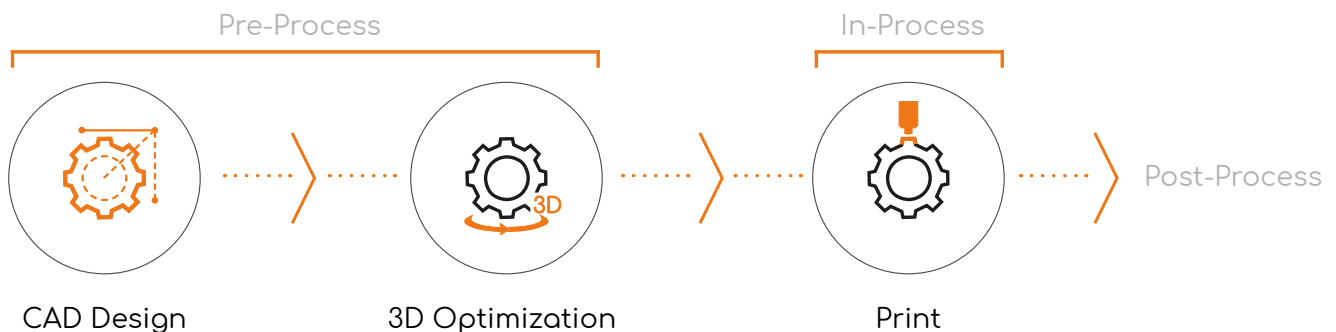
Know-how and expertise around the AM value-added chain guarantee a high efficiency

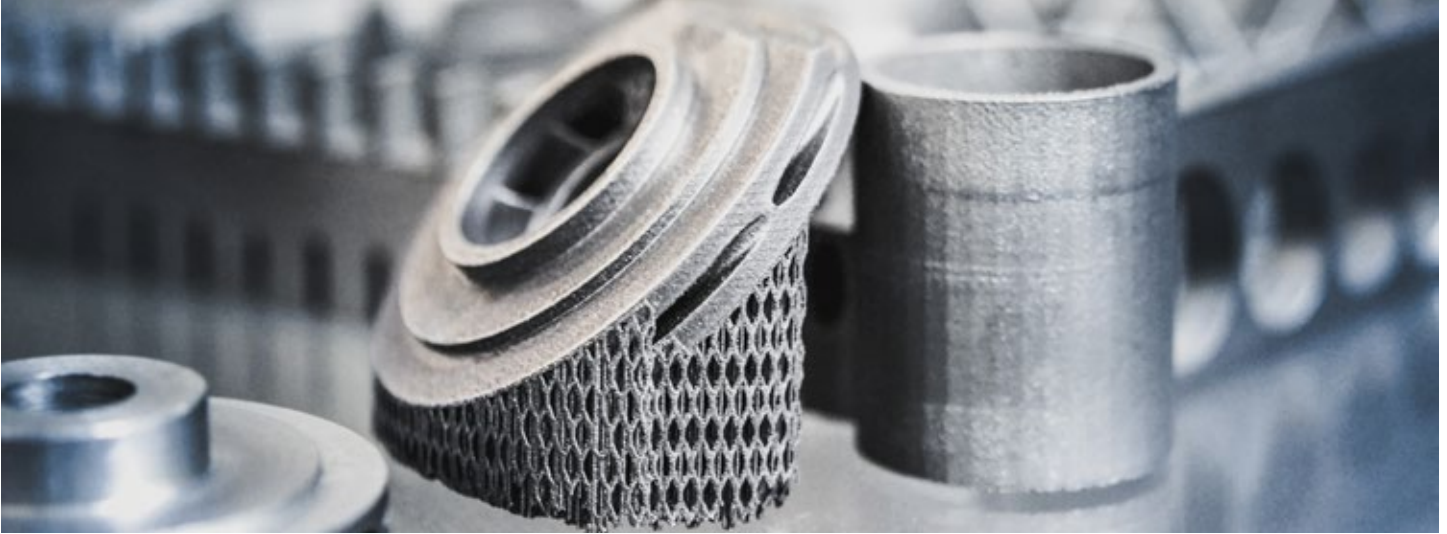
Additive manufacturing offers a tremendous potential for the development of innovative new products and the optimization of already existing ones. However, this potential can only be exploited by considering the complete value-added chain. To do so requires special know-how, not only in the fields of product design / engineering, process and print technology, but also post processing and surface finishing.

**AM Solutions – 3D printing services** offers you the required, broad knowledge base. The unique combination of expertise and know-how, combined with state-of-the-art software and hardware, guarantees consultation and other services that are optimally adapted to your specific requirements. Irrespective of the task, designing a compo-

nent from scratch, optimizing an existing one, the reverse engineering of a product by 3D scanner or the adaptation of a work piece that has been manufactured with conventional production methods to additive manufacturing, AM Solutions – 3D printing services can assist you!

In all cases the actual printing process and surface finishing requirements are already taken into consideration during the design phase. This helps prevent problems with the post processing of the work pieces and eliminates the need for costly retroactive design changes. In addition, a broad spectrum of available 3D print technologies for a variety of different materials ensures that your AM components can be produced consistently and in the best possible quality.





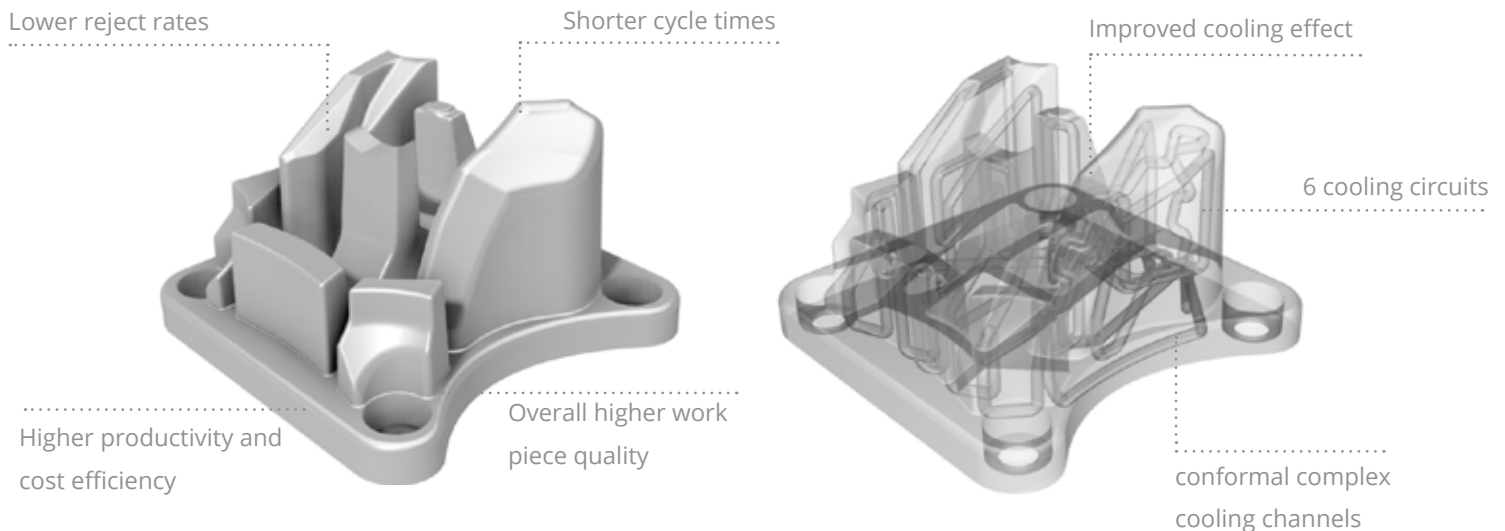
## AM Solutions – 3D printing services: Support that includes more than just printing

1. Design from scratch and redesign for additive manufacturing
  - Design and engineering
  - Structural analysis
  - Topological optimization
  - Validation
  - 3D print simulation
  - Reverse engineering by 3D scan
2. 3D printing of metal and technopolymers
  - SLM
  - SLS
  - PolyJet
  - FDM / FFF
3. Post processing possibilities
  - CNC machining
  - Surface finishing
  - Heat treatment
4. Quality control
  - Optical measurements
  - Tactile measurements
  - 3D scans

To provide you with the best possible quality, we are utilizing state-of-the-art software and hardware from industry-leading manufacturers.

We know how to take advantage of the possibilities of additive manufacturing for your benefit

- Boundless design possibilities (e.g. light-weight components, cooling channels, lattice structures)
- Fast design iterations
- Reduction of the number of product components
- Integration of functional aspects
- Time / cost savings (single stage production process, production that requires no labor, no tooling costs)
- Time-to-market (shorter development times)
- Eco friendly technology (material savings / practically no scrap)



Component: Tool insert with optimally placed conformal cooling channels

## 3D post processing

# Automated and cost efficient post processing with absolutely consistent high-quality results

We meet the most demanding quality requirements

The surface finishing demands are as multifaceted as the spectrum of 3D printed components. They require treatment processes in line with the functional characteristics of a component and must produce absolutely repeatable results.

Be it unpacking, powder removal, removal of support structures, surface homogenizing and smoothing, or high gloss polishing and dyeing (coloring) - with our comprehensive know-how in the field of additive manufacturing and decades of experience in surface preparation and finishing we can offer the optimal solution for each and every post process task, irrespective of the component material and the printing system; everything from one

single source! The fully automatic treatment processes guarantee stable, repeatable results combined with considerable time and cost savings.

Our equipment, perfectly adapted to your specific requirements, can be supplied as stand-alone units or as fully automated, linked systems. Of course, the work piece handling can be manual, partially or fully automated, entirely in line with your preferences.

This allows you to consistently produce high-quality results for all post processing functions with a higher cost efficiency and, thus, provides you with a decisive competitive advantage!



Post-Process



Powder Removal

Support Removal

Surface Finishing

Dyeing

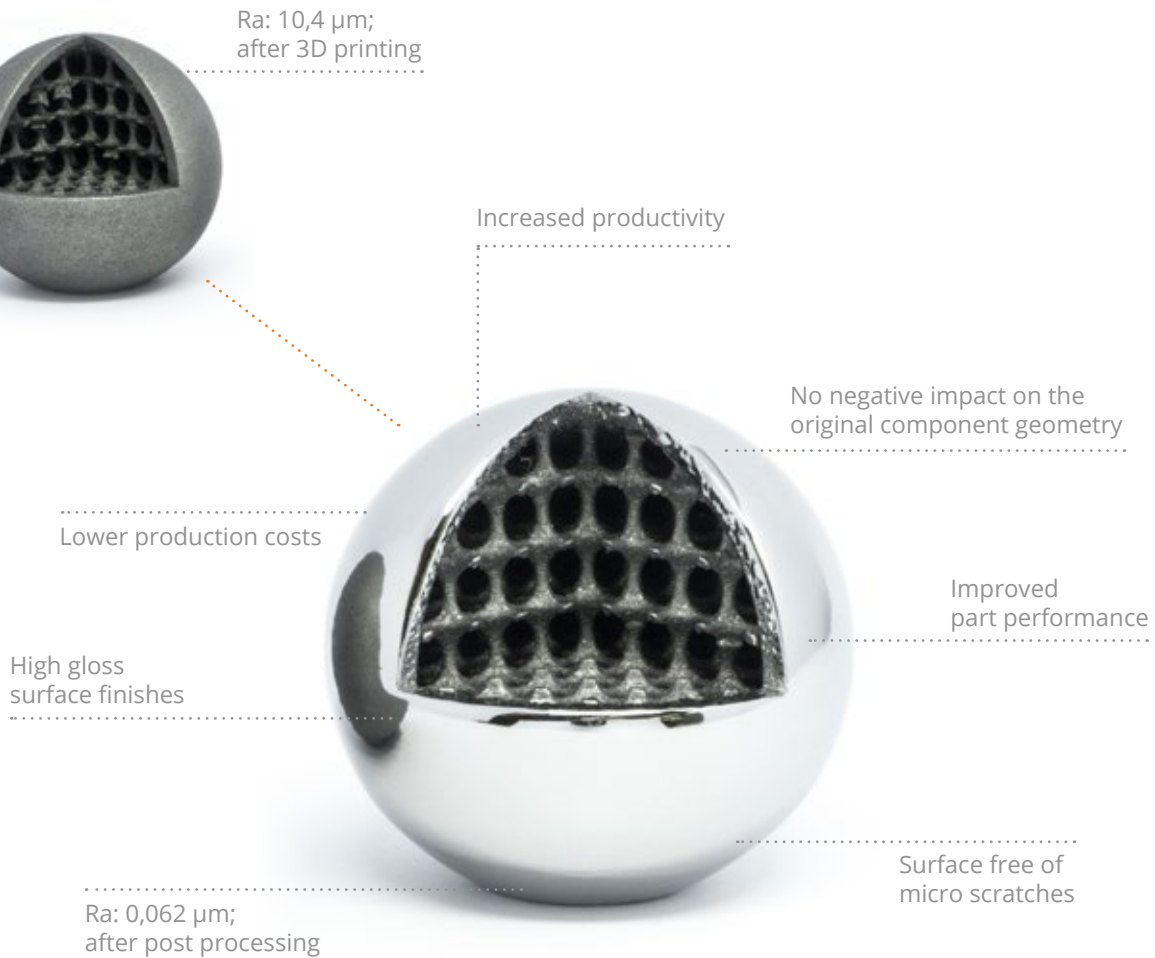


### Our service, your benefit

- Decades of experience in the field of surface preparation and finishing
- Innovative, customer oriented process development in the field of additive manufacturing
- Processes that have been adapted to each individual work piece and process stage
- Tailor made advice for the optimal work piece design
- Broad portfolio of equipment for surface preparation and surface finishing
- Consumables that have been specifically developed and adapted for AM components
- Broad service package that can deal with any post processing challenge



Your surface finishing demands are our yardstick



Source of photo: Cooperation partner GPA Innova

**M1** – The ideal machine for single piece processing and small work piece batches



The compact, easy to operate M1 can be perfectly integrated into your manufacturing flow and can be easily adapted to a variety of different tasks. Whether you must process small work piece batches or single components – you will always achieve perfect and absolutely repeatable results.

- Easily adaptable to different finishing tasks
- Several work pieces can be treated simultaneously in different processes
- Compact system with integrated process water recycling and process control

## M2 – The ideal machine for high volume production

In case of high work piece volumes the M2, with its high productivity, will achieve the required surface finish in extremely short cycle times. The automated system guarantees consistent high-quality results and a maximum in cost efficiency.

- Intuitive, easy to use system controls
- Compact, space saving footprint
- Automatic control of all relevant process parameters ensures high process stability



### M3 – Gentle surface finishing of large, complex components

The grinding or polishing media is evenly flowing around the firmly mounted work pieces in the working section of the M3. This ensures an intensive, even processing, even on internal surface areas. Since the work pieces do not touch each other, and because of the gentle processing

even very delicate components can be treated without the risk of nicking or any other damage. The intelligent equipment design allows finishing one single, large component (max. size = 600 mm) or treating several small work pieces in one single batch.

- Automatic loading and unloading of the media
- Easy, ergonomic work piece handling
- Fully automatic process in a completely closed system



S1 – Cost efficient plug-and-play system for powder removal and surface cleaning



The easy to install plug-and-play S1 model allows cost efficient removal of powder and surface cleaning of your components made from metal or plastic immediately after the printing process. Because of its small footprint and sturdy design this machine can be easily integrated into your manufacturing environment and can be used for multiple tasks.

- Manual and semi-automatic operation
- Optimum results with simple and complex work piece geometries
- Designed for use with different consumables
- Quick and simple cleaning of the system

**S2** – Highly efficient powder removal, surface cleaning and homogenizing in one process



The fully automatic, compact S2 system with integrated work piece handling and unload function allows powder removal, cleaning and/or surface homogenizing of the output of several printers in short cycle times. The integrated quality control system with camera and multiple sensors guarantees excellent results and highly efficient operation.

- Suitable for plastic work pieces made with powder bed based 3D print systems
- Gentle and, at the same time, intensive processing
- Continuous cleaning and classification of the media
- Allows of reclaimed powder re-use

### S3 – Effective and fully automatic post processing of large, complex components

Designed for post processing of large complex work pieces made from metal and plastic, the S3 is highly productive, can be used with a robot and requires little space. The completely controlled, water based

processes for removing of support structures and residual powder as well as surface homogenization are very gentle, run fully automatically and produce consistent, absolutely repeatable results.

- Plug-and-Play-system includes integrated controls as well as air and water cleaning system
- Recycling of the process water
- Requires little space
- L shaped door allows work piece loading by crane



## Our partners



DECI Duo and DEMI

Before



After



FDM Print Technology | ABS Build Material | SR30 Support Material

PostProcess Technologies is the pioneer of automated 3D post-printing, offering software-driven support removal and surface finishing solutions. Their systems eliminate time-consuming piece-by-piece manual finishing and inefficient traditional finishing machinery with a combination of software, hardware, and consumables. From SLA to FDM to MJF to PolyJet, PostProcess has got it covered. Their suite of solutions finishes all 3D print technologies, allowing users to

increase throughput and boost productivity to realize the full potential of additive manufacturing.

- Consistently finish even the most complex and delicate parts
- Trust a software-controlled process that achieves high quality repeatability
- Remove the post-print bottleneck, enabling high volume production



PostProcess' software-based technology integrates with proprietary chemistry and hardware systems to provide automated, intelligent, comprehensive post-print solutions. In addition to solving today's rapid proto-typing and low volume production post-print challenges, our solutions can connect the direct digital thread needed to deliver continuous post-printing for high volume production.

Our AUTOMAT3D software enables users with the convenience and flexibility of a single post-print platform for

use across all of their 3D print operations. We've spent years collecting data from hundreds of thousands of benchmark parts of all 3D print technologies. The data we've collected is at the core of our software design, which incorporates optimized recipes to deliver a precise finish every time.

AUTOMAT3D continuously monitors and reacts to key process factors to optimize part finish. This logic-based, real-time decision making reduces operator attended time to increase the efficiency of the user's AM operation and enable volume production.





### THE New Concept of Polishing: Same shape, just polished

DLyte is a technological solution that simplifies and standardizes the postproduction process of metal parts, improving the finishing results obtained with traditional polishing systems. The new production systems allows to create very complex geometries which uptill now have not been achieved meeting the initial technical requirements. DLyte allows and ensures that the final finish fits these technical specifications.

“The process extracts the material only from the high peaks of the roughness, it does not round the edges and penetrates the internal cavities of the piece to which cannot be accessed mechanically.”

- Preserves the initial shape and edges
- Ra under 0,09  $\mu\text{m}$
- Mirror finishing in one step
- Repetitibility and standardization



## About CIPRES

CIPRES was founded by Carlos Prestien in 2004. From 2006 CIPRES began with the serial production through additive manufacturing (3D printing) and can talk about an economical batch production of 3D printed nylon parts nowadays. We are said to be pioneers of coloring of nylon 3D printed parts and are the leading service provider in this field. By now the focus of CIPRES is a further development of color techniques, color units and solutions for surface finishing. Our portfolio allows our customers to get the best results from their additive manufacturing concepts for serial productions.

### **At CIPRES, the corporate culture is aligned to the satisfaction of our customers**

- We are a highly innovative company
- We vigorously develop a high quality output
- Our relationships with our customers and business partners are aligned to mutual sustainable benefit

# Processing equipment and finishing consumables for practically every material

The ideal basis for individual, customer-oriented process development

Additive manufacturing has special requirements:  
We have the answer

Regardless of whether you print components from metal, plastic, ceramic or any other material – with AM Solutions – 3D post processing you have a technology partner who can support you at every stage of post processing. We offer not only a wide spectrum of machine equipment but can also supply the required media and compounds, which are constantly adapted to all kinds of AM applications.

Our consumables product range includes grinding &

polishing media, compounds for customized mass finishing processes and shot blast media. This wealth of products paired with the knowledge and experience of our specialists in the Rösler test centers around the world allows the development of process solutions that can fully meet your specific technical requirements. The result: We can provide you with technically and economically optimal solutions for practically every application.











## Rösler Academy – the central training center of the Rösler Group

The Rösler Academy is the central training center of the Rösler Oberflächentechnik GmbH and offers hands-on, practical seminars about all surface treatment technologies available from the Rösler Group. The goal of the

Rösler Academy is to support you by sharing our know-how with you. Certified coaches offer numerous seminars in the fields of mass finishing, shot blasting, lean management and additive manufacturing.

### **Seminar AM.1 - Post processing of 3D printed components:** From support removal all the way to surface finishing.

With this seminar you will obtain comprehensive knowledge about post processing of 3D printed components. The seminar highlights different post processing methods for various print technologies and will help you choose the post processing technology that is most suitable for your AM application. Besides the most suitable data analysis for AM you will gain valuable knowledge allowing you to consider important post processing aspects during the product design phase and the printing process.

- The interdependence between 3D print and post processing
- Support removal
- Surface finishing
- The impact of data preparation on the post processing function

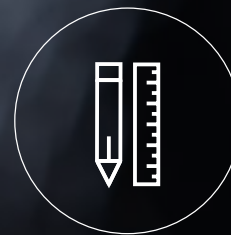
You find the complete training program under  
[www.rosler-academy.com](http://www.rosler-academy.com).



rapid



precise



tailor-made

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