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hirtenberger
Engineered Surfaces



HIRTISATION®

POST-PROCESSING OF 3D PRINTED
METAL PARTS

HIRTISATION®

THE MISSING LINK IN AM PRODUCTION

The Hirtisation® process has been specifically developed for the post-treatment of 3D printed metal parts. The method is suitable for all common metals and alloys and all types of printing technologies used in additive manufacturing (LBM, EBM, ...).

Hirtisation® is based on a combination of electrochemical pulse methods, hydrodynamic flow and particle assisted chemical removal and surface treatment. The treatment media used in this multi-step process are material-specific and guarantee a gentle surface treatment. There are no mechanical processing steps involved.

Over several process steps adhering powder cake and support structures are removed. Partially sintered metal

particles and burrs typical for surfaces of as-printed parts are reproducibly dissolved and the surface roughness is significantly reduced. Hirtisation® does not only affect the outer surface of the component but also reaches deeply into cavities and geometric undercuts.

Thus, the process offers the unique possibility to use all the freedoms of metallic 3D printing and acts as an enabler for the whole metal 3D printing industry.

Hirtisation® is the perfect surface pretreatment for subsequent finishing processes such as protective coatings and functional layers!

HIRTISATION® STEPS

THREE WORRIES LESS WITH HIRTISATION®

STEP 1

In the first step support structures as well as powder cake are reliably removed. Additionally, this step reduces the as-printed surface roughness from initial values of around Ra 100 µm to a level of about Ra 10 µm.



STEP 2

The second step of Hirtisation® brings the level of surface roughness down to about Ra 2 µm. This homogeneous levelling leads to a surface quality sufficient for most industrial applications. The modular nature of the Hirtisation® process allows the start of the posttreatment at this step, if no support structures are present on the part.

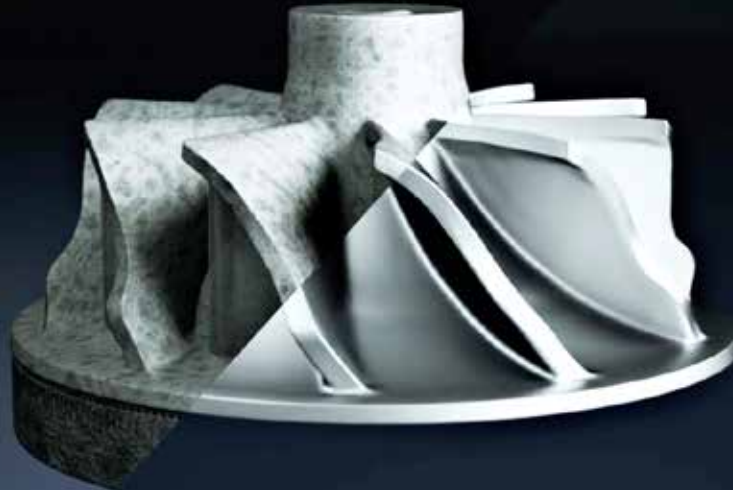


STEP 3

The third and last step of Hirtisation® may follow step two, if a high polishing of the surface for a decorative finish is required. This optional step reduces the surface roughness down to values below Ra 0.5 µm.



YOU PRINT THE PART...



...WE DO THE REST!

MATERIALS

Hirtisation® is standardly applied and proven in industrial settings for the treatment of the following metals and alloys:

- ▲ Titanium (Ti6Al4V)
- Aluminium (AlSi10Mg, Scalmalloy)
- Steel (1.2709, 1.4404, 1.454X)
- ⬡ Inconel (IN 718, IN 625)
- ◆ Coming soon: Hirtisation® for the treatment of copper alloys

PROCESS MEDIA

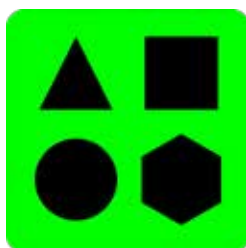
Developed, produced and supplied by Hirtenberger Engineered Surfaces, all process media are material specific and adjusted to the different steps of the Hirtisation® process. The media are provided in ready to use vessels for

the compact finishing module systems H3000 and H6000 as well as in intermediate bulk containers for the H12000 industrial finishing line. A worldwide support and distribution network ensures a timely supply of the process media.

STEP 1



STEP 2



STEP 3



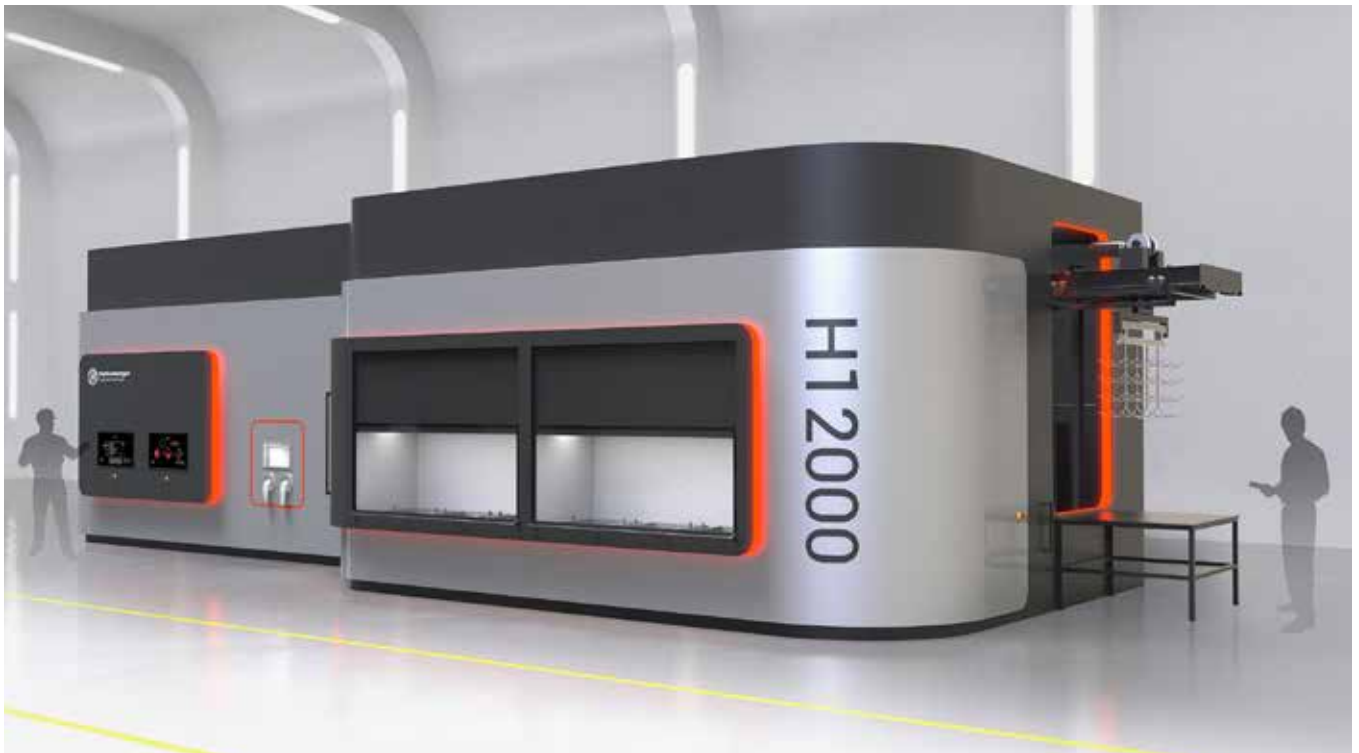
An intuitive color and symbol coded labeling system ensures highest work safety, reliability and correct usage.

POST-PROCESSING at INDUSTRIAL SCALE

REACHING BEYOND RAPID PROTOTYPING? MEET YOUR INDUSTRIAL ENABLER!

Large series production of additively manufactured parts requires post-processing of equal dimensions. Thankfully, the unique scalability of the Hirtisation® post-process enables a reproducible, high quality finishing at any scale. With the H12000 industrial finishing line there is no need anymore for any error-prone manual post-treatment steps.

This fully automated solution integrates seamlessly into the process chain of additive manufacturing. Targeting large manufacturing businesses, a single H12000 is able to finish the output of up to 25 3D printers. Thanks to parallel processing, a cycle time of less than an hour can be realised.



FINISHING SERVICE

Hirtenberger Engineered Surfaces offers Hirtisation® for any number of parts also as a finishing service at our site in Austria.

We value every customer and are able to adapt to any specific application task. All common metals & alloys and all sizes of 3D printed metal parts can be handled. In addition to our finishing service, we offer a broad range of Quality Control testing.

In a close partnership with our customers we offer feedback towards the design, especially support structures, to ensure the optimum finishing results. We also support research projects to help pushing additive manufacturing to the next level.

We are happy to demonstrate that Hirtisation® is the post-processing solution you are looking for!

PRODUCTS

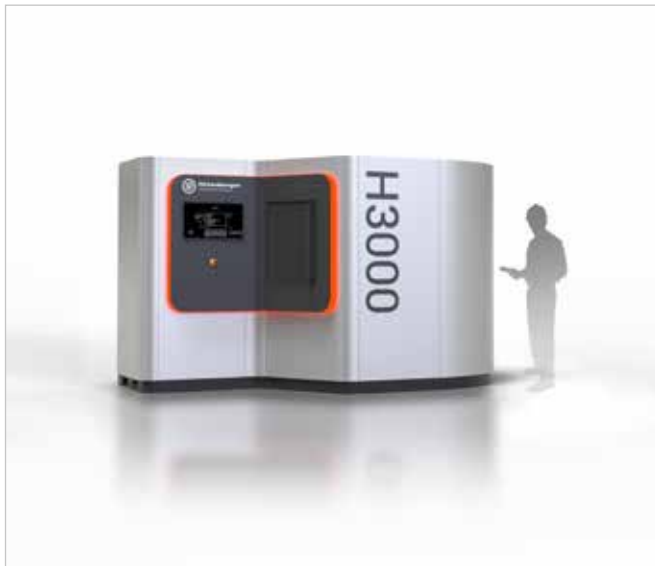
THE H-SERIES: FULLY AUTOMATED FINISHING MODULES

All three steps of the Hirtisation® process are included in one finishing module for flexible and reliable finishing of 3D printed metal parts. The interface has been designed to meet the demands of the 3D printing industry allowing the integration into any industrial AM manufacturing environment. Process media adhering to the component are thoroughly eliminated; the surface-treated part is clean and dry at the end of Hirtisation®.

SYSTEM FEATURES

- Operation possible by personnel without any special education
- Process applicable for all 3D printed metals and alloys
- Automated removal of support structures
- Automated removal of partially melted grains and powder cake
- Levelling of surface roughness while retaining edge sharpness
- Polishing of surfaces
- Finished parts are cleaned and vacuum dried
- Process chemicals are fully integrated, automatically regulated and can safely be replenished
- Process time varies from 30 minutes to 5 hours depending on part size and quality requirements
- Multiple parts can be finished in parallel

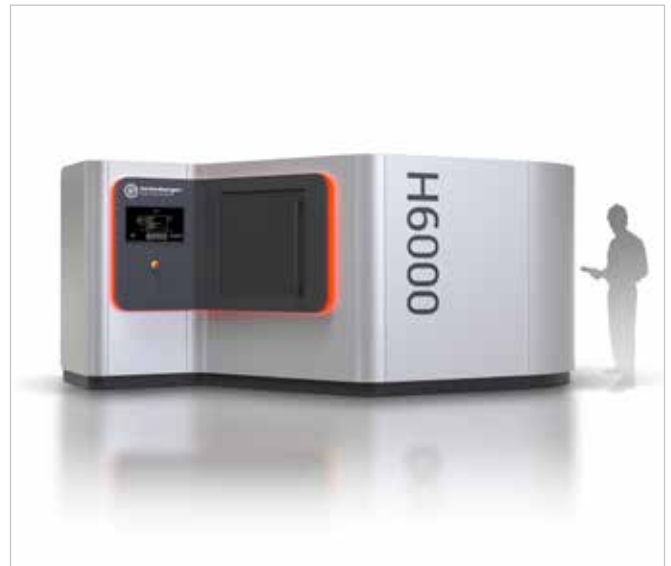
H3000



The H3000 is your entry to the fully automated post-processing world of Hirtisation®. Therefore, it is specifically designed for quick and agile businesses such as on-demand print-shops. It offers optimal support for small scale production of different parts in a part window of 300 x 300 x 100 mm. One H3000 can handle the part feed of up to 3 AM-printers.

Thanks to its modular design the H3000 can be adjusted to various applications, e.g. ultra sonic cleaning for the medical industry.

H6000



Take the next step in Hirtisation® with the H6000. The big sister of the H3000 offers a larger part window of 500 x 500 x 300 mm, without requiring additional infrastructure or interfaces. If you have worked with a H3000 you will feel right at home. The H6000 was designed for larger print shops or intermediate industrial users and can handle the part feed of up to 3-4 AM-printers. The H6000 can be extended by an optional sample feed system.

MAP OF THE LOCATION

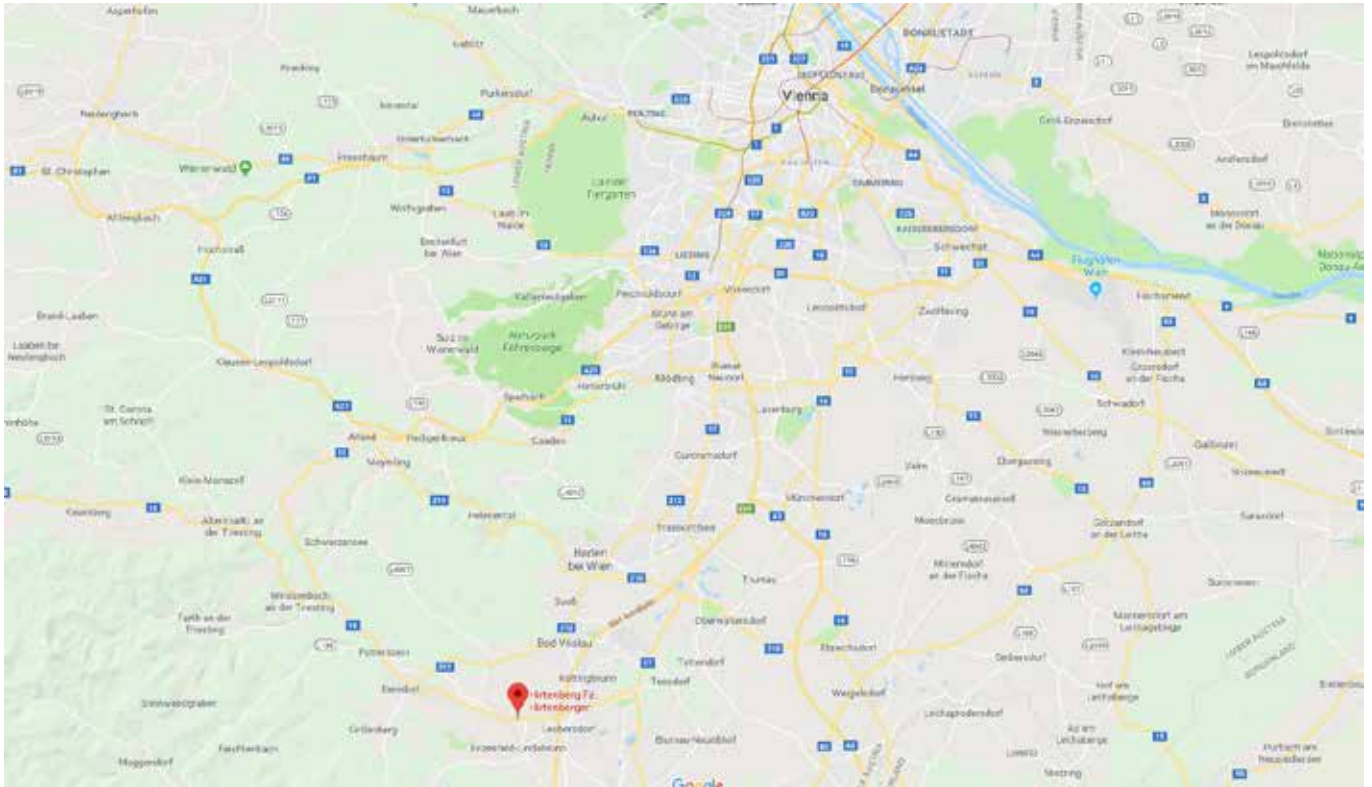


Image source: Google Maps

LET'S TALK POST-PROCESSING

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