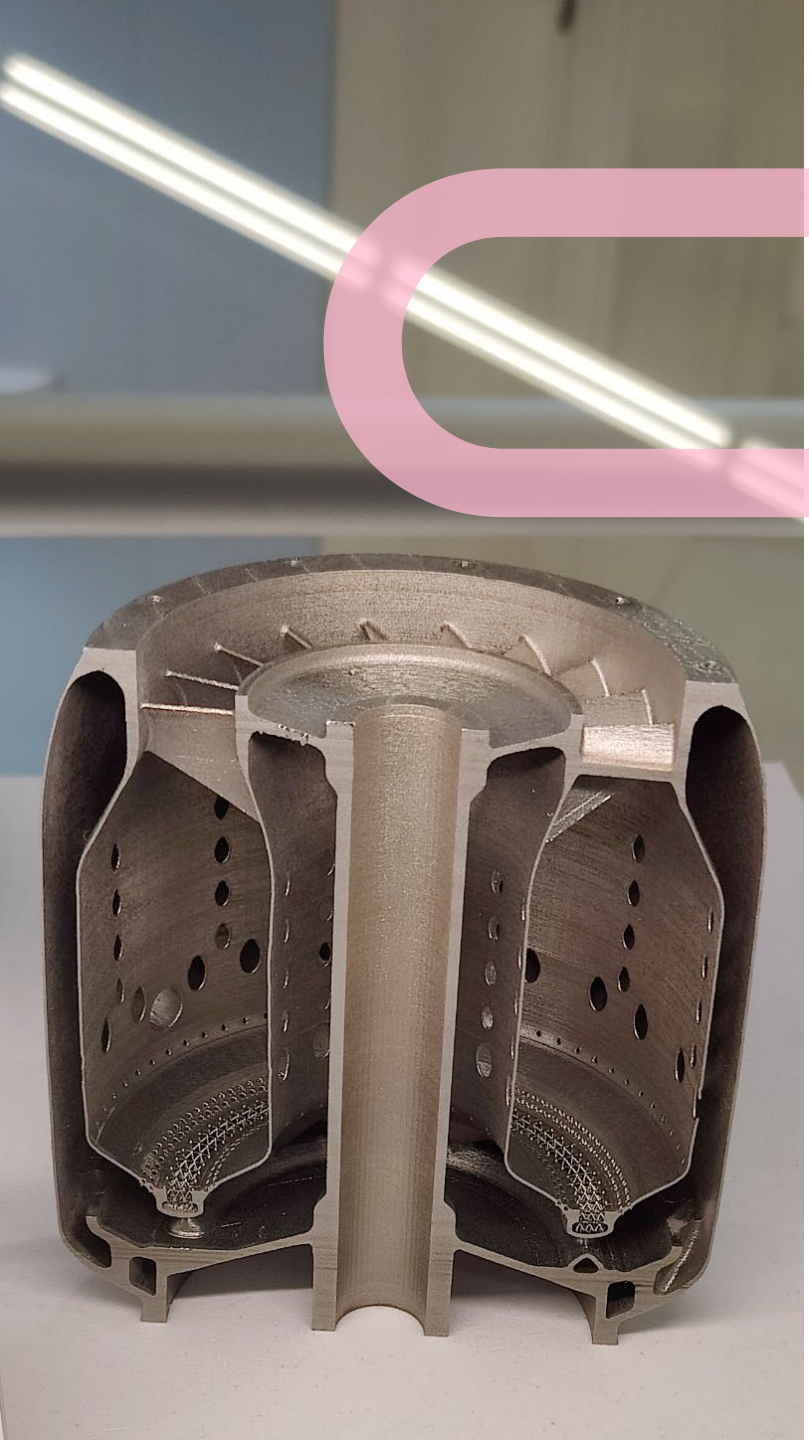

formnext
19-11-2021
MODYN
design that moves



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RAPID prototyping

Printing really fast

cure while printing

Massivit 3D focuses on selling printers that can print fast and big volumes. Innovating the AM techniques in this direction is the most logical step as this is one of the biggest hurdles of most 3D-printing techniques used.

- 300mm/s printing speed(!)
    - 35cm on z-axis per hour for 1m cylinder
- 145cm x 111cm x 185cm build size
- cures while printing

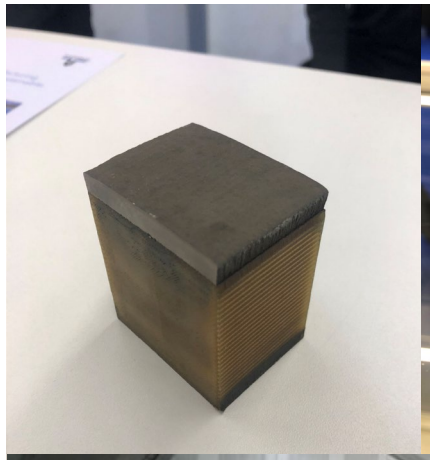
Company: MASSIVit 3D
Country: IL
Technique: GDP (Gel Dispensing Printing)
Material: Photo Polymeric Gels
Product: Printers

Cold spray

to print fast and ‘unlimited’ in size

Titomic is a company that originates in Australia. They claim that they can print a complete bikeframe in one piece in under 25 minutes.

Other advantages other than speed and size is the possibility to laminate different types of metal on to each other, or that you can cold spray metal on a lot of different materials and surfaces.



Company: Titomic
Country: AU (& US)
Technique: Cold spray
Material: Ti-Al6-4V, metals
Product: Printers

~~Prototyping~~ → Serial production

Serial production

moldmaking

Another way companies are making AM more suitable for serial prototyping is by making molds for products, instead of the product itself.

On the right is an example of a Dutch company that sells big printers that make use of robotic arms with an attached print-head. This mold is made for panel-beating a car door.

- saves a lot of material when comparing to CNC-milling
- sustainability
- possibility of rapid iterations
- different material options

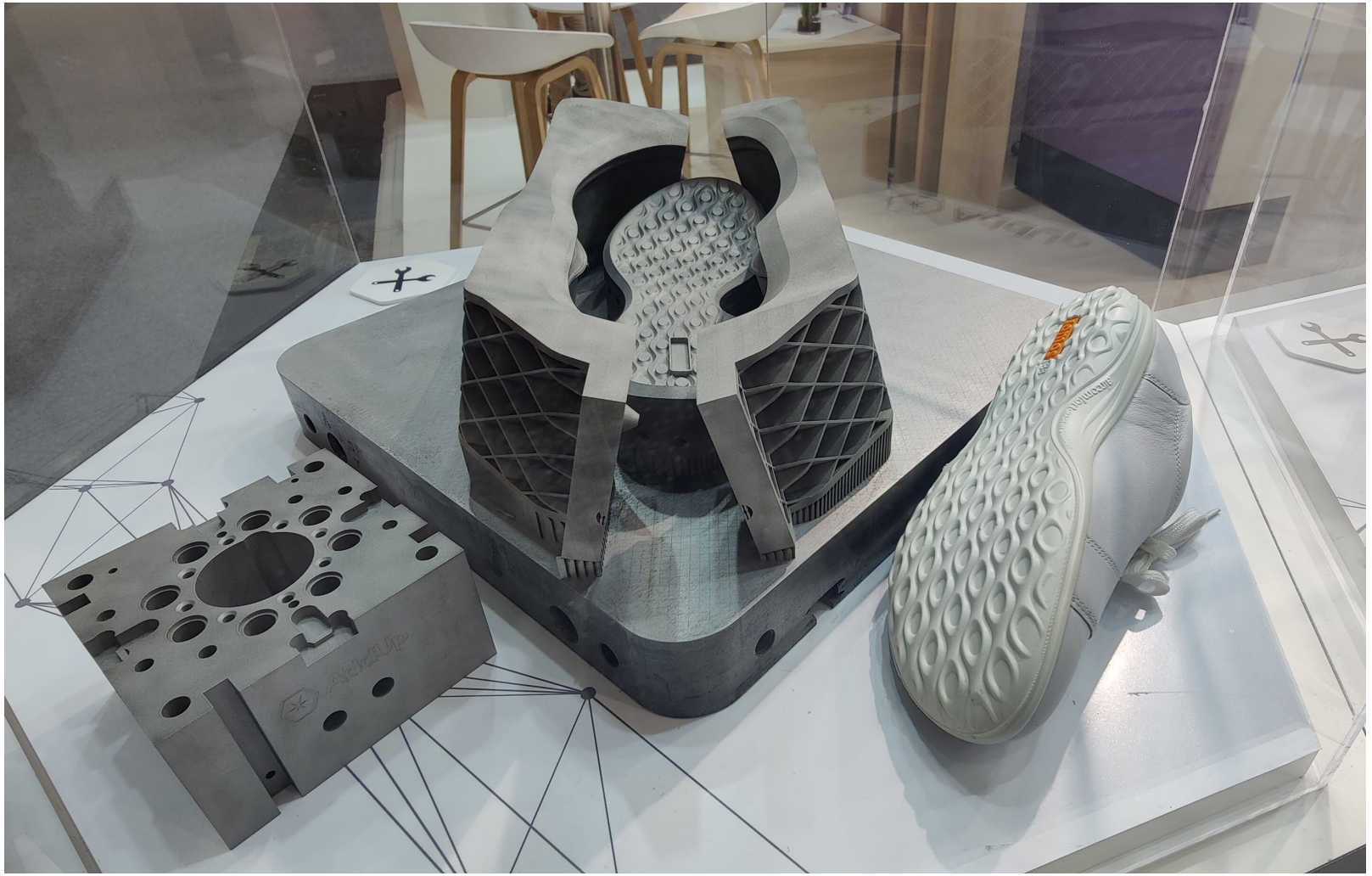
Company: CEAD
Country: NL
Technique: FDM
Material: Plastics
Product: Machines

Serial production

moldmaking II

AddUp is a company from France that can produce parts for you on their machines. They have a wide range of products and molds that they produce for their clients.

- 350cm x 350cm x 350cm build volume
- 4 lasers to ensure 100 % homogeneous surface



AddUp
GLOBAL ADDITIVE SOLUTIONS

Company: AddUp
Country: FR
Technique: PBF, DED
Material: Metal alloys
Product: Supplier

Being competitive

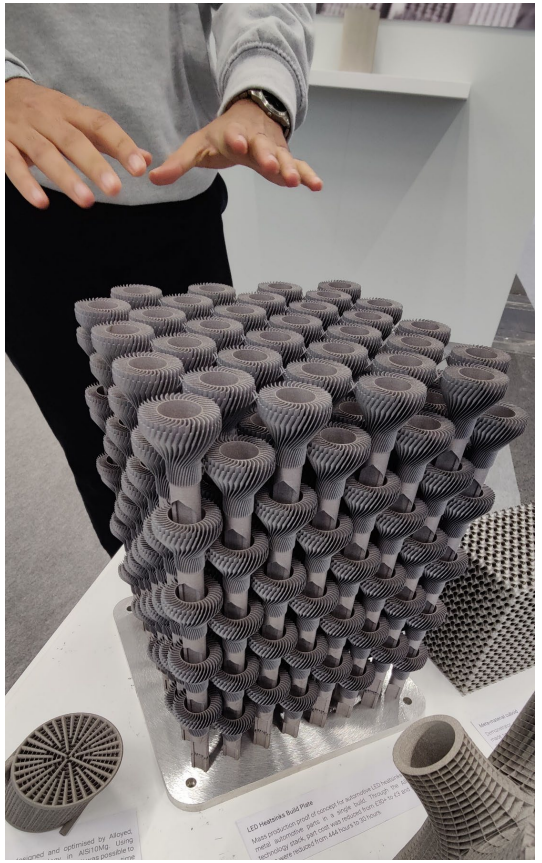
using software

Alloyed is a company that makes software for optimizing the use of AM techniques like PBF.

The idea is that, using their software, they can produce as many parts as possible in the least amount of time. To keep costs per parts low and thus more compatible with regular manufacturing techniques.

The example on the right showcases a LED heatsink for a car headlight. By using their software, they managed to:

- fit 384 parts on one build plate,
- reduce build time from 444 hours to 30 hours,
- reduce part cost from £30+ to £3.
- sustainability



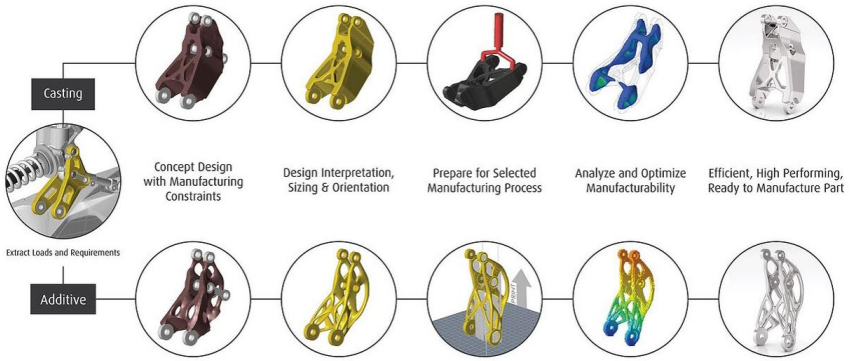
Company: Alloyed
Country: UK
Technique: L-PBF: (SLS/SLM/EBM)
Material: AlSi10Mg
Product: Software

Software

Improving structures

using software

nTopology is a widely known name in the generative design industry. We can download a trail version of the software to see what we can do with it and how the workflow is.



nTopology

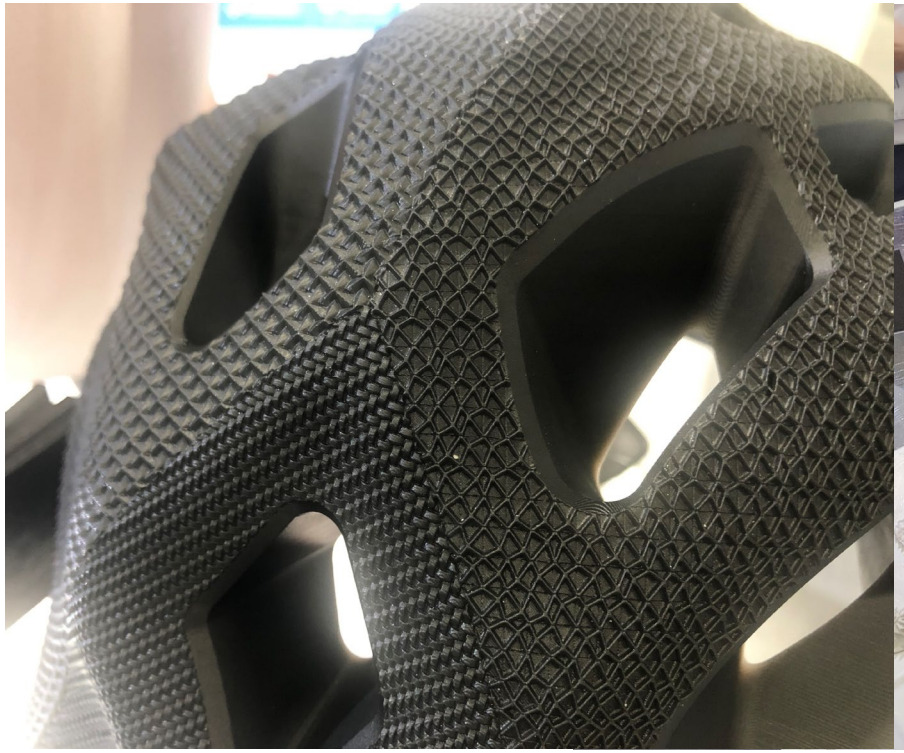
Company: nTopology
Country: US
Technique: -
Material: -
Product: Software

Generating textures

using software

This software is somewhat similar to the software of nTopology. Core Technologie brought some examples of different textures that their software can generate over an existing CAD-model.

They have a library with over 80 different self-generating textures available.



CORETECHNOLOGIE

Company: Core Technologie
Country: DE
Technique: -
Material: -
Product: Software

“Soft goods”

Softgoods

lattice structure padding

Oechsler helps companies in integrating flexible lattice structures into their products. The car's seat and the Deuter back-pack were two examples that show the possibilities of using these materials and techniques.

But that is just a small fraction of the things they can do with AM. They have over 150 machines worldwide and have produced over 2.5 million parts.

Oechsler makes use of the Carbon3D printers. Which use a DLS technique. Digital Light Synthesis is a resin-based 3D printing process that uses digital light projection, oxygen-permeable optics, and engineering-grade materials to produce polymeric parts.

OECHSLER

Company: Oechsler
Country: DE
Technique: DLS, MJF, DLP
Material: Elastomer?
Product: Supplier

Mobility

Printing bike lugs

and selling the bicycles

All sturdy bikes start with a fitting session. These bikes are custom made for the person buying it.

Using 3D-printing, Sturdy can create unique shapes and forms that can not be made using regular techniques.

These bikes are being sold for € 5.000 – € 10.000, depending on the model.

Sturdy

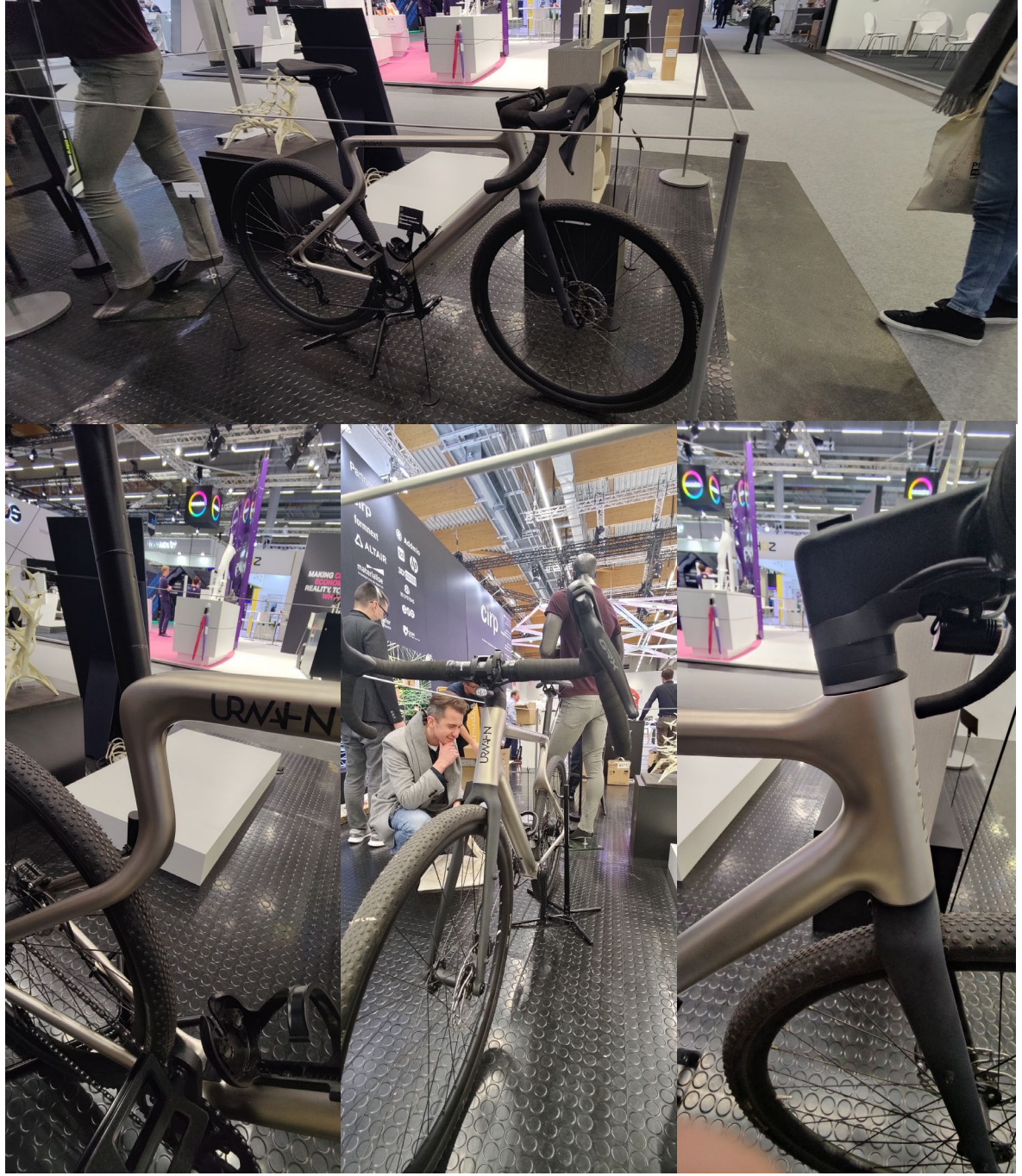
Company: Sturdy cycles
Country: UK
Technique: E/L-PBF
Material: Ti6Al4V
Product: Bicycles

Printing bike lugs

and selling the bicycles

Urwahn are similar to Sturdy bikes in that they are also using 3D-printed lugs, welded to conventional steel tubing. The difference is that Sturdy uses titanium alloys, whereas Urwahn uses steel. Urwahn then neatly grinds the connections smooth for an even and tight look that seems more akin to carbon frames than steel ones.

The basic Urwahn model is available for € 4500,-



Company: Urwahn cycles
Country: DE
Technique: SLM
Material: Steel
Product: Bicycles

A whole department

based around AM technology

Decathlon has an entire department built around AM. They use it for part replacement, repairs, prototyping. More than 100,700 projects have been completed by the ADD LAB since it opened, with over 60,000 of these dedicated to finished products, such as making spare parts or fittings for shops.

The project bike displayed on the right is for vanRysel - a Decathlon internal brand focussed on racing bikes for competition – to develop a concept bike made using AM.

- to ensure design-freedom
- improved performance (material distribution)
- sustainability

Company: Decathlon (Add lab)
Country: FR
Technique: MJF (HP)
Material: PA, TPU & PP
Product: Research and spare parts

Things around the bike

produced using AM

Finishing

Removing the powder

cleaning and reusing

One thing that stood out to us where the number of booths dedicated to the cleaning and reusing of powder from SLS-like prints. As printers get better, faster and more autonomous, it does not make sense that the cleaning and finishing of these parts is still mostly done by hand.

That is why a lot of companies are looking for solutions in making closed-loop systems for powder-removal, sifting and reusing.

ABS smoothing

acetone vapor treatment

Zaxe is a Turkish company that sells low-priced, fully enclosed, heated chambered FDM machines.

They had an interesting example of what ABS in combination with an acetone smoothing treatment, could look like. It almost looks fully painted.

Company: Zaxe
Country: TR
Technique: FDM
Material: ABS
Product: Printers

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