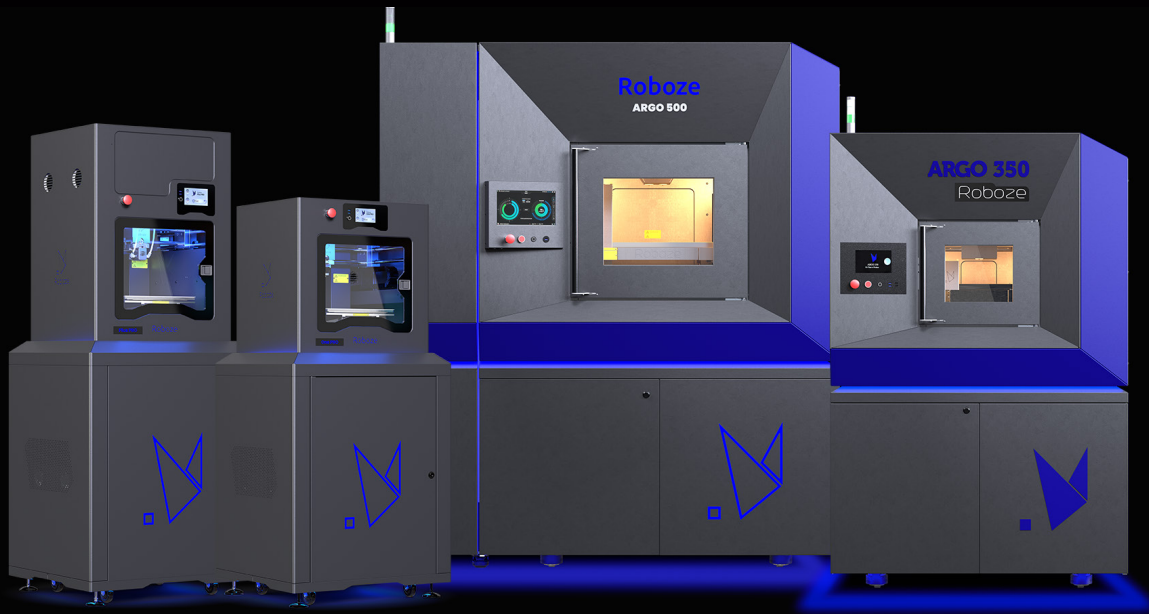


Roboze

3D Solutions for parts



Roboze Production Series

Roboze production series provide the users with an AM-machine suitable for industrial use

Cut Costs and Production Times

Produce customized batches, on demand and just in time, reducing warehouse stocks as well as cutting production costs & time

Parts Certification

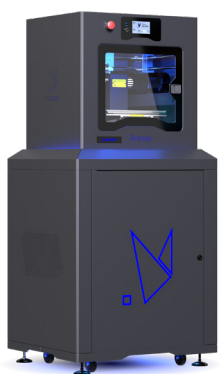
Every part produced can be certified, thanks to complete records of all production parameters and conditions during production

Unmatched Repeatability

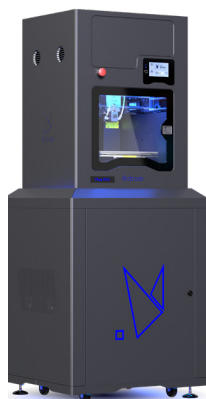
Produce parts with unmatched accuracy, speed and repeatability with the fully integrated Roboze Automate technology ecosystem

Performance of materials

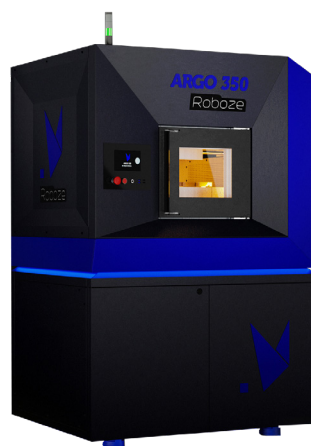
Produce functional components suitable for use in extreme applications with high mechanical, thermal and chemical resistance.



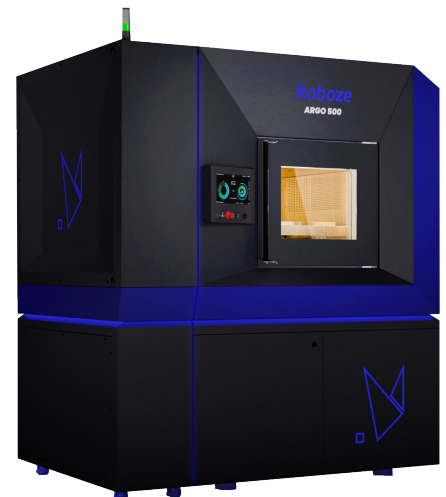
Roboze One PRO



Roboze Plus PRO



Roboze ARGO 350



Roboze ARGO 500

Produce parts with super polymers and composites

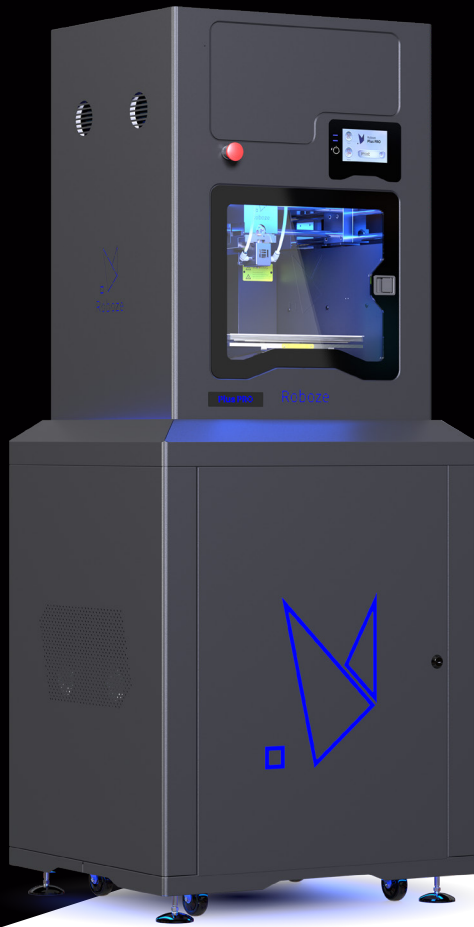
Produce your parts in a few hours, with Roboze machines on your shop floor



Produce parts

Roboze additive manufacturing (AM) technology is built on four differentiating factors to improve overall parts performance compared to the competition

- Beltless pinion-rack system for controlling the movement of the machine in all directions, permits a precision of down to 10 μm .
- High Viscosity Polymer (HVP) Extruder.
- Heated chamber, securing uniform heat distribution to parts during printing.
- A wide selection of engineered materials to meet the most demanding applications



Roboze Plus PRO

Professional Series Roboze Xtreme 3D printers

System Size (X)790 x (Y)690 x (Z)1910 mm

(X)31,1 x (Y)27,2 x (Z)75,2 in

Print bed (X)300 x (Y)250 x (Z)220 mm

(X)11.8 x (Y)9.8 x (Z)8.7 in

Precision 15µm / 0.59 mil

Printing Speed:
4000 mm/min

Roboze Plus PRO

Readily accessible PEEK 3D printer, Roboze is one of the first companies to have made this extraordinary material available in the 3D printing sector. Our knowledge in this super polymer is unparalleled. Obtain functional PEEK parts with an unmatched print quality

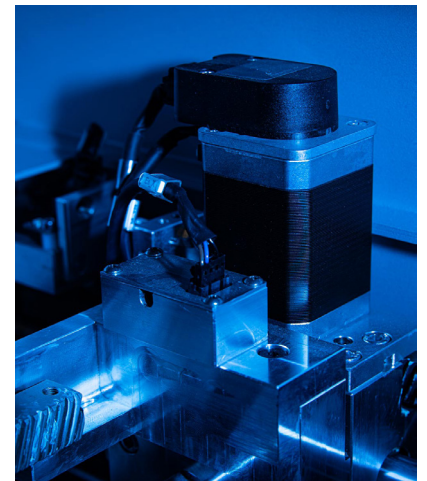
Material management

The HT Dryer has the function of preparing the material before printing, drying and heating it, thus guaranteeing surface quality and mechanical performance of the parts produced.



Industrial equipment

The Roboze Plus PRO has motors with encoders capable of automatically correcting any errors, ensuring accuracy and repeatability of movement with guaranteed tolerances.

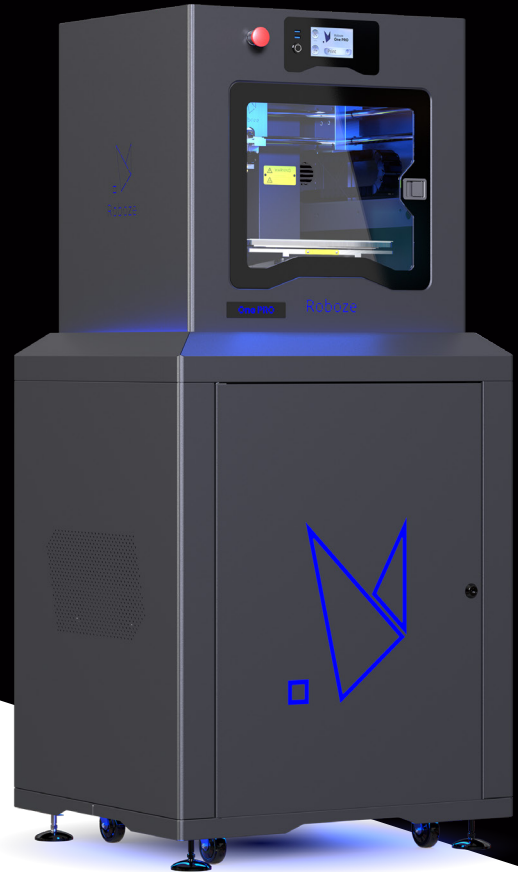


Roboze One PRO

Professional Series Roboze Xtreme 3D printers

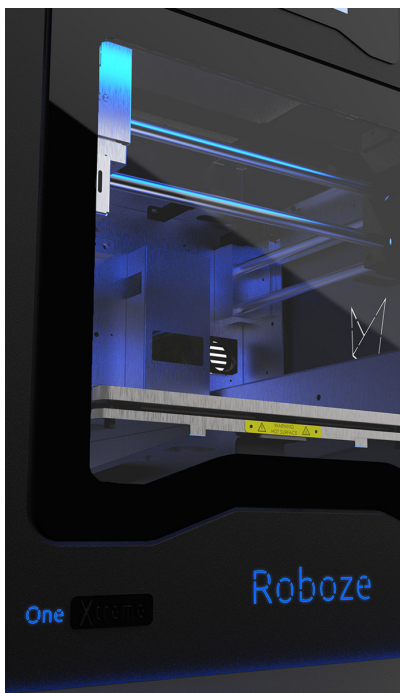
System Size (X)790 x (Y)690 x (Z)1660 mm
(X)31,1 x (Y)27,2 x (Z)65,4 in
Print bed (X)300x (Y)250 x (Z)200 mm
(X)11.8 x (Y)9.8 x (Z)7.9 in
Precision 15µm / 0.59 mil

Printing Speed:
4000 mm/min



Roboze One PRO

Roboze One PRO is equipped with a vacuum system, designed to ensure perfect flatness and adhesion of parts during the printing process, reducing manual operations and guaranteeing the dimensional tolerances of the parts produced.

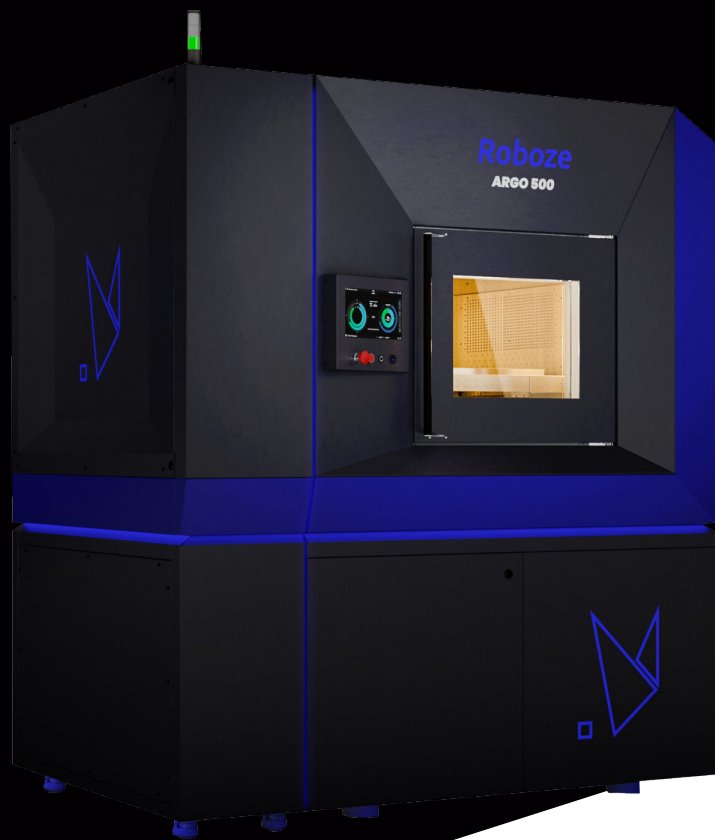


Chemistry for adhesion

For the adhesion of the parts on the surface, Roboze does not use improvised methods, but polymeric films that have chemical compatibility with the deposited materials. The film change takes place in a few seconds, and can be used multiple times.

Advanced sensors

The Roboze One PRO is equipped with sensors for the automatic material loading and detection of possible anomalies to guarantee total control of the machine status



Roboze ARGO 500

Produce large parts and custom batches

System Size (X)1935 x (Y)1436 x (Z)2375 mm
(X)76.2 x (Y)56.5 x (Z)93.5 in
Print bed (X)500 x (Y)500 x (Z)500 mm
(X)19.7 x (Y)19.7 x (Z)19.7 in
Precision 10µm / 393.70µin

Printing Speed:
5000 mm/min

Produce large parts and custom batches

Integration into production

ARGO 500 is the first 3D printer for super polymers equipped with PLC technology from B&R (ABB Group). Roboze and B&R have collaborated to bring for the first time industrial automation into 3D printing systems dedicated to metal replacement, making ARGO 500 integrate and communicate with the entire production workflow in smart factories.

Automated control

In ARGO 500, all the process variables are controlled in a completely automatic way, eliminating the manual operations and the experience required by the operator - from the leveling of the build plate to the calibration of the extruder, from the insertion and automatic change of filament up to the functions of drying and preheating of the material. Everything is automated and controlled.

Strong like Metal

ARGO 500 processes super polymers and composites such as PEEK, CarbonPEEK, ULTEM AM9085F, CarbonPA and many others, bringing 3D printing to the world of customized industrial production, replacing metal and creating series up to 3,000 parts.

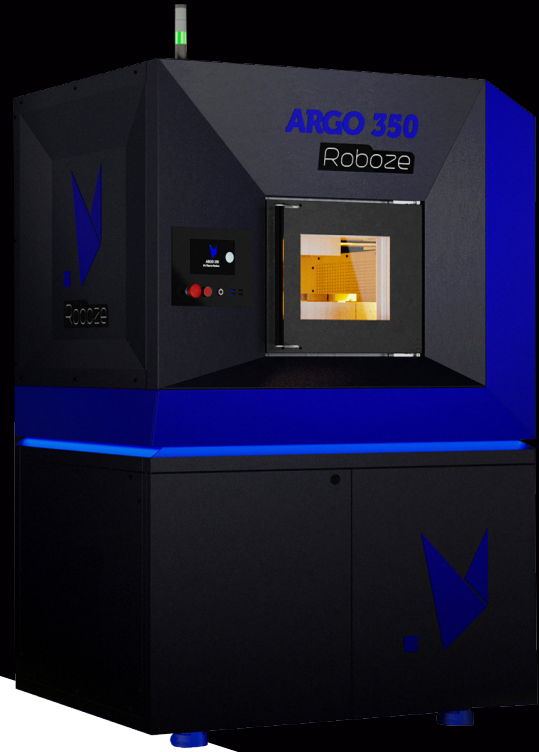
The performances achieved by super polymers and composites challenge the common conception of what a plastic can do, creating a new industrial perspective, made of incredible performance and circularity of raw materials.

Roboze ARGO 350

Produce parts with super polymers and composites

System Size (X)1300 x (Y)1150 x (Z)2000 mm
(X)51,2 x (Y)45.3 x (Z)78.7 in
Print bed (X)350x (Y)300 x (Z)300 mm
(X)13.8x (Y)11.8 x (Z)11.8 in
Precision 10µm / 393.70µin

Printing Speed:
5000 mm/min



Production of accurate and repeatable parts, with very high performance

Dimensional tolerances

The combined pinion & rack system, alongside precise calibration and levelling of the build plate allows for production of parts with down to 10µm precision and a layer height of down to 25µm. Repeatability in production is also assured the same way.

Metal replacement

The ARGO series is capable of producing parts made with superpolymers such as PEEK & Carbon PEEK. Both of these materials have properties that can make them attractive replacements for parts made in metals.

Material management

The Roboze HT Filament Dryer, integrated on both ARGO 350 & 500, is able to ensure perfect drying and management of the material. The drying and pre-heating process is essential for having a moisture-free material that ensures unparalleled mechanical performance and surface quality of the finished part.

Made for precision

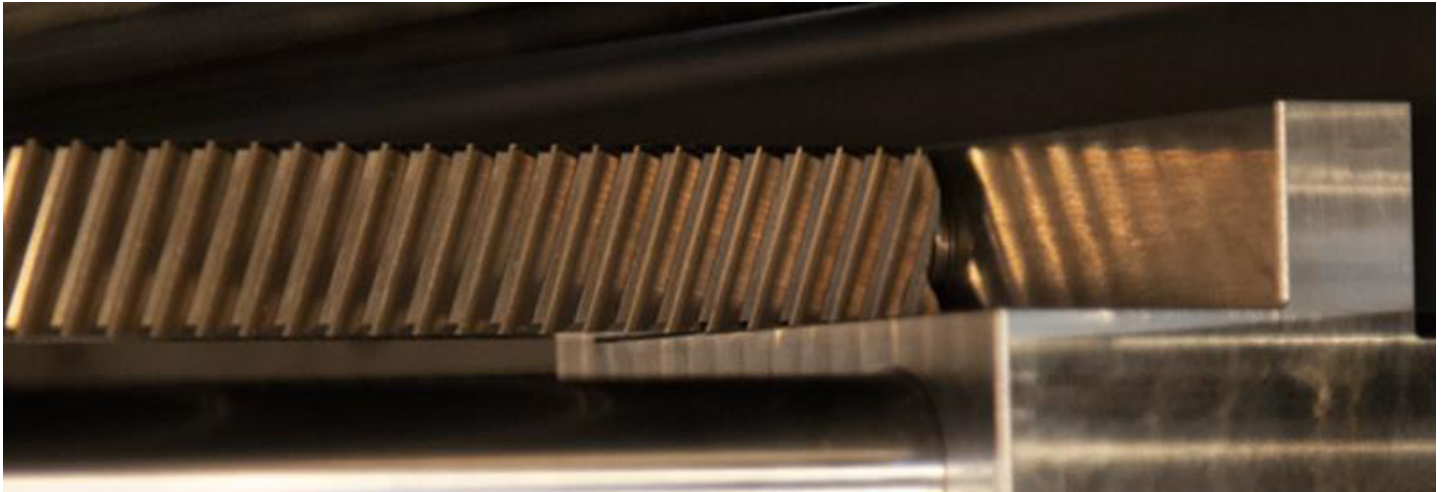
Roboze additive manufacturing (AM) technology is built on four differentiating factors to improve overall parts performance compared to the competition

- **Beltless pinion-rack system for controlling the movement of the machine in all directions, permits a precision of down to 10 μm .**
- **High Viscosity Polymer (HVP) Extruder.**
- **Heated chamber, securing uniform heat distribution to parts during printing.**
- **A wide selection of engineered materials to meet the most demanding applications**

Beltless System

Direct movement is secured with a helical rack and pinion. This ensures that accuracy can be as fine as 10 μm / 0,4 mil with a repeatable precision of 5 μm .

This ensures that both fine and repeatable parts can be produced with all of Roboze machine range. The beltless system also provides another benefit in requiring less maintenance.



HVP Extrusion system

The HVP extruder is specially developed to work with high viscosity materials by providing the least amount of friction inside the nozzle as well as temperatures of up to 450 C at the nozzle to minimize any shrinkage phenomena and ensure a proper preservation of chemical-physical properties of the extruded material.

Optimized polymer flow & temperature ensures that parts are produced with good quality.



Best-in-class Heated Chamber

Heated air enters the chamber from both sides as shown, and air is circulated via the bottom of the chamber and re-heated to be fed back into the loop.

The Roboze heated chamber is the result of years of work, prototypes and hundreds of simulations. We developed this unique solution to allow a homogeneous working environment aimed at consolidating the parts with a perfect thermal fusion of each layer in order to achieve exceptional mechanical properties. This is among the most important elements of the Roboze Automate technological ecosystem as it has a strong impact on the mechanical properties of the final component.

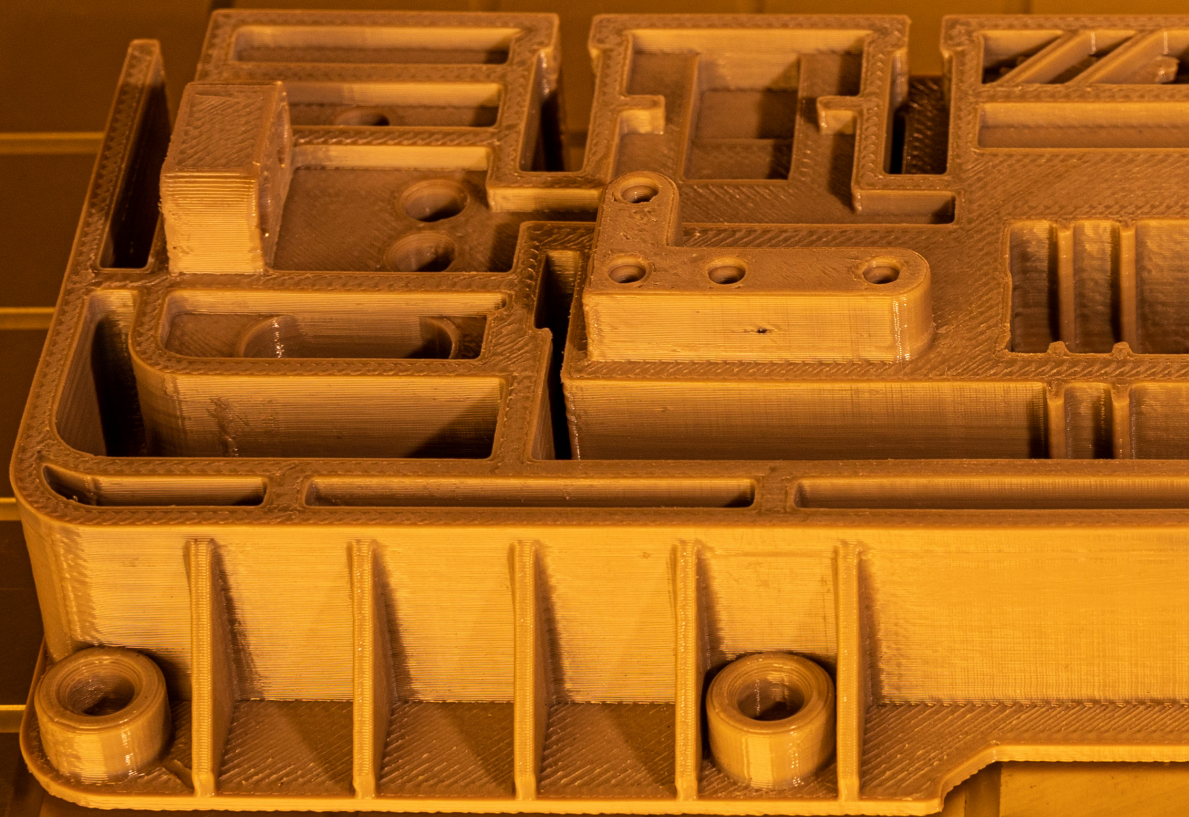


Heated chamber

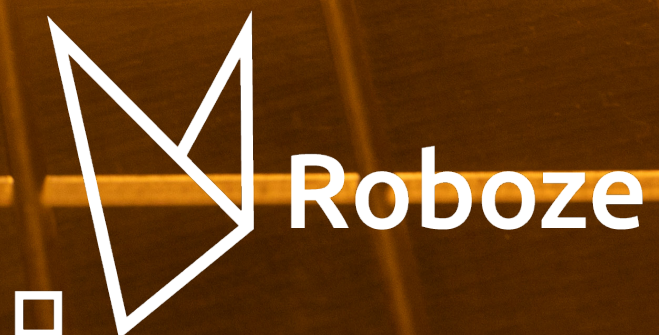
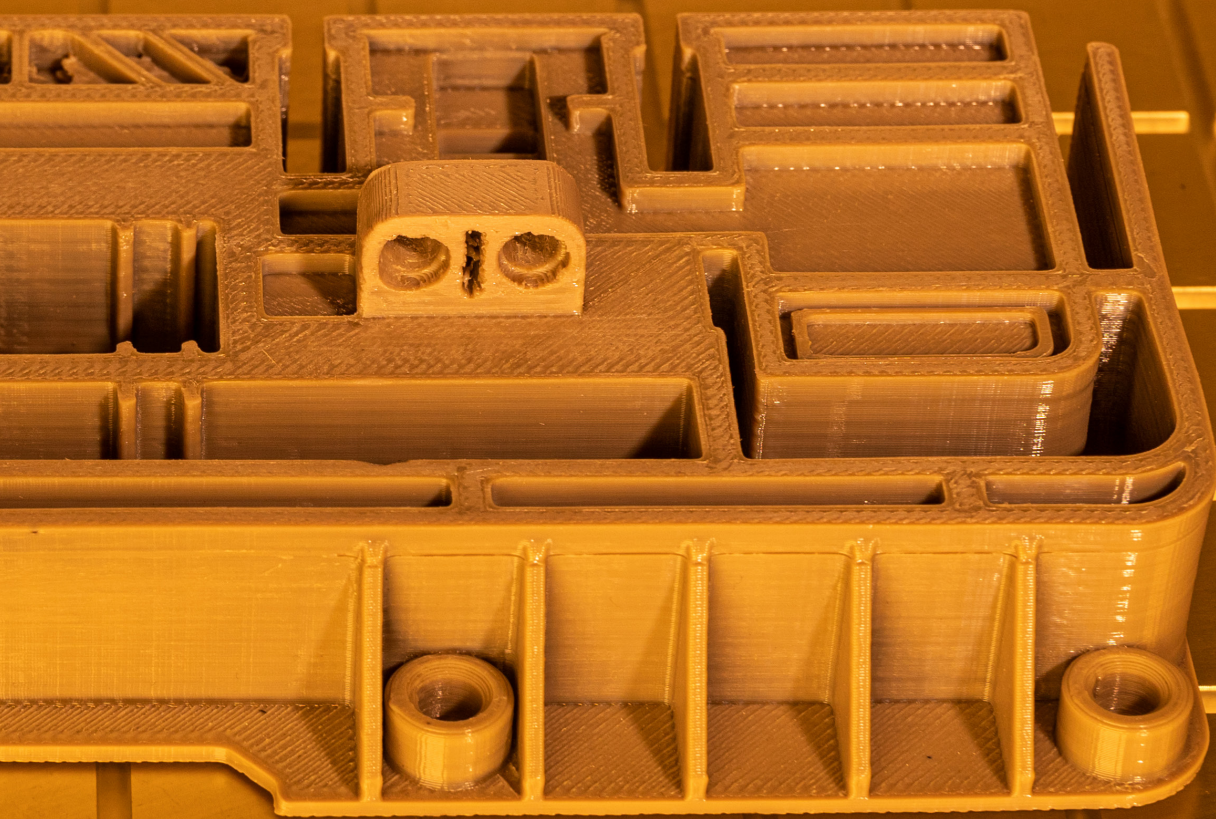
The heated chamber features uniform heat around the part and sensors to precisely control temperature, critical to production of parts using polymers. The chamber is capable of a continuous temperature of up to 180 C, with local variations of temperature kept within a 5-10 C.

Heated air enters the chamber from both sides as shown, and air is circulated via the bottom of the chamber and reheated to be fed back into the loop.

RE-SHAPING MA



MANUFACTURING



Roboze

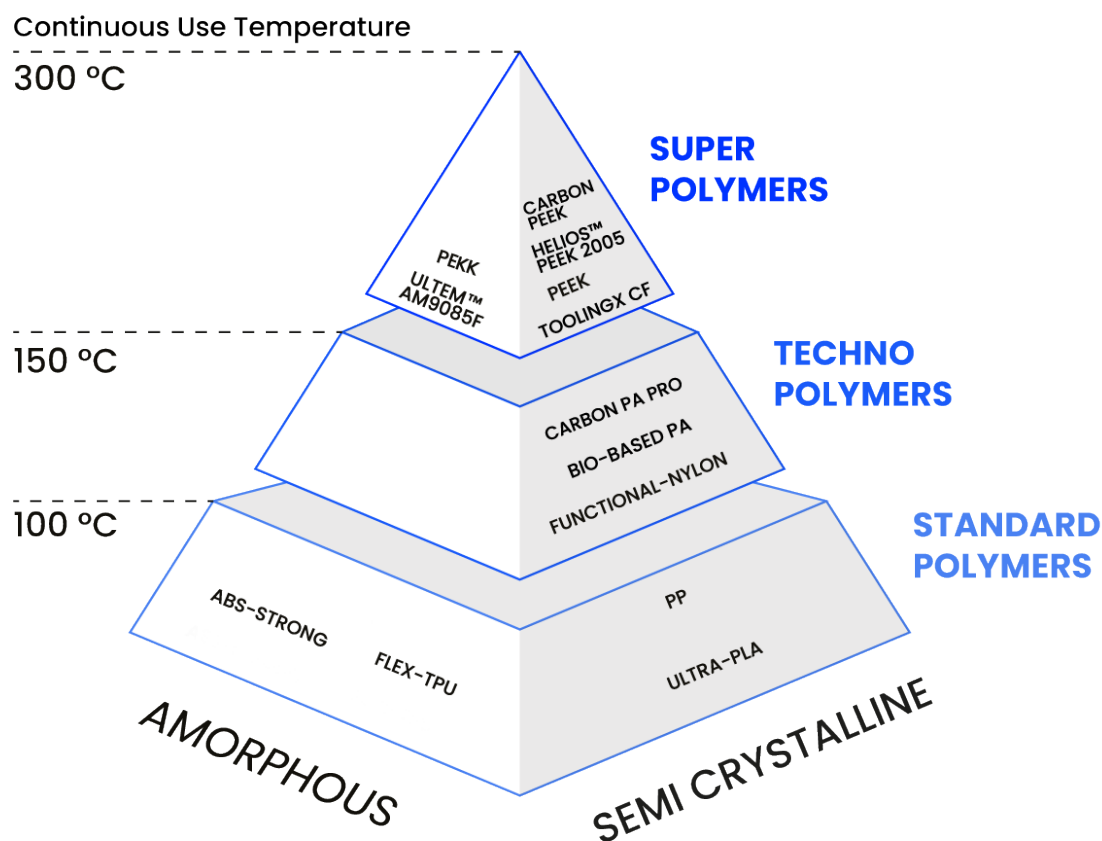
Produce parts with super poly

Roboze machines feature a wide range of available materials ranging from more affordable options like ABS & PP to high end technical polymers such as PEEK & ULTEM.

Material Pyramid and Selection

Composite materials are also available, both with chopped glass & carbon fibres as the chosen reinforcement material. This increases both mechanical and thermal properties of the matrix materials thus reinforced.

For more details on the full range of materials available please consult pages 11-15 in this folder.



Continuous use temperature (CUT)

The pyramid above categorizes the available materials according to their suitability related to their continuous use temperature.

Polymers and composite materials

STANDARDS POLYMERS

PP

PP is one of the plastics that is used the most for the production of consumer goods and in several industrial sectors, thanks to its excellent chemical resistance, lightness and impact resistance.

Another interesting property, if compared with other materials used in the FFF 3D printing sector, is its semi-transparency that can be useful in those applications where it is necessary to monitor the level of liquids or it is expected the diffusion of light sources.



Ultra PLA

ULTRA is a PLA developed by Roboze, with the addition of charges that improve the mechanical performances and the aesthetic qualities of the biopolymer.

It is ideal for the production of conceptual prototypes and functional parts that do not need to withstand specific operating conditions.

ABS-Strong

STRONG is an ABS with improved mechanical properties, ideal for the functional prototyping. The main properties of this amorphous polymer are the good dimensional stability under low loads, impact resistance and chemical resistance against solvents, alcohol and oils. ABS' surface properties and the extraordinary aesthetic quality allow to directly paint the parts after printing.



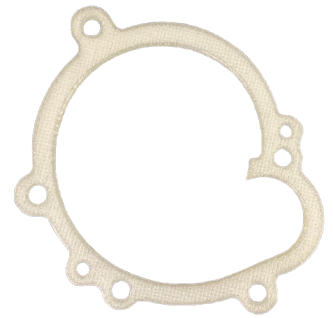
Produce parts with super poly

Roboze machines feature a wide range of available materials ranging from more affordable options like ABS & PP to high end technical polymers such as PEEK & ULTEM.

STANDARS POLYMERS

Flex-TPU

FLEX is developed for Roboze and it is based on TPU. Thermoplastic elastomers are unique materials that combine the key processing and recycling properties of thermoplastics. With many of the physical properties of thermosetting rubbers such as elasticity, low compression set and high flexibility.



TECHNO POLYMERS

Carbon PA PRO

Carbon Polyamide (PA 6/66) was developed for Roboze customers and is based on a polyamide matrix reinforced with 10% by weight of carbon fibers.

The addition of 10 % by weight of chopped carbon fibers makes it possible to obtain a composite material with high mechanical strength, stiffness and thermal resistance. Furthermore, the polyamide matrix offers high toughness at low temperatures as well as easy processing.



Functional Nylon

Roboze Functional Nylon is one of the techno polymers that is widely used thanks to a good value for money. The low friction coefficient and the self-lubricating properties, combined with the excellent mechanical resistance, make Functional the ideal material for the realization of tribological components and, in general, the suitable solution for all those applications that require a good flowability and wear resistance.

Polymers and composite materials

TECHNO POLYMERS

BIO-BASED PA

Roboze Bio-based PA, filled with natural fibers, was born from the combination of Roboze's commitment to develop high-performance eco-sustainable products with reduced environmental impact. It is an ideal engineering polymer for the production of tools and equipment that accelerates the achievement of manufacturing companies' sustainability goals while contributing to a positive future for the planet.



SUPER POLYMERS

Roboze PEKK

FLEX is developed for Roboze and it is based on TPU. Thermoplastic elastomers are unique materials that combine the key processing and recycling properties of thermoplastics. With many of the physical properties of thermosetting rubbers such as elasticity, low compression set and high flexibility.



ULTEM™AM9085F

ULTEM™AM9085F filament by SABIC is a high temperature, amorphous polyetherimide thermoplastic blend. It consists of a polyetherimide (PEI) with a polycarbonate copolymer blend incorporated for improved flow.

It belongs to the category of high performance technopolymers, or superpolymers, as it has resistance to hydrolysis, UV-light and acid solutions, advanced thermal performances and strong mechanical characteristics. ULTEM™AM9085F also has good electrical properties, which remain stable over a wide range of temperatures and frequencies (including microwaves).



Produce parts with super poly

Roboze machines feature a wide range of available materials ranging from more affordable options like ABS & PP to high end technical polymers such as PEEK & ULTEM.

SUPER POLYMERS



Carbon PEEK

Carbon PEEK is a carbon-fiber-reinforced PEEK. The reinforcement done with 10% chopped carbon fibers improves the compressive strength, stiffness, and load capacity of PEEK. Carbon PEEK is considered among the strongest of all thermoplastics at room temperature because it offers superlative properties that, together with its optimal wear and abrasion resistance, make it ideal for the substitution of metals in more extreme environments. It is very resistant to hydrolysis in boiling water and superheated steam, as well as to organics, acids, and bases.

Roboze Helios™ PEEK 2005

Roboze Functional Nylon is one of the techno polymers that is widely used thanks to a good value for money. The low friction coefficient and the self-lubricating properties, combined with the excellent mechanical resistance, make Functional the ideal material for the realization of tribological components and, in general, the suitable solution for all those applications that require a good flowability and wear resistance.



PEEK

PEEK offers a unique combination of mechanical properties such as resistance to chemicals, wear, fatigue and creep, as well as exceptionally high-temperature resistance. It also has good resistance to combustion and good electrical performance. Due to the semi-crystalline nature of this polymer, its low tendency to creep, and its good sliding and wear, properties are retained over a wide temperature range.

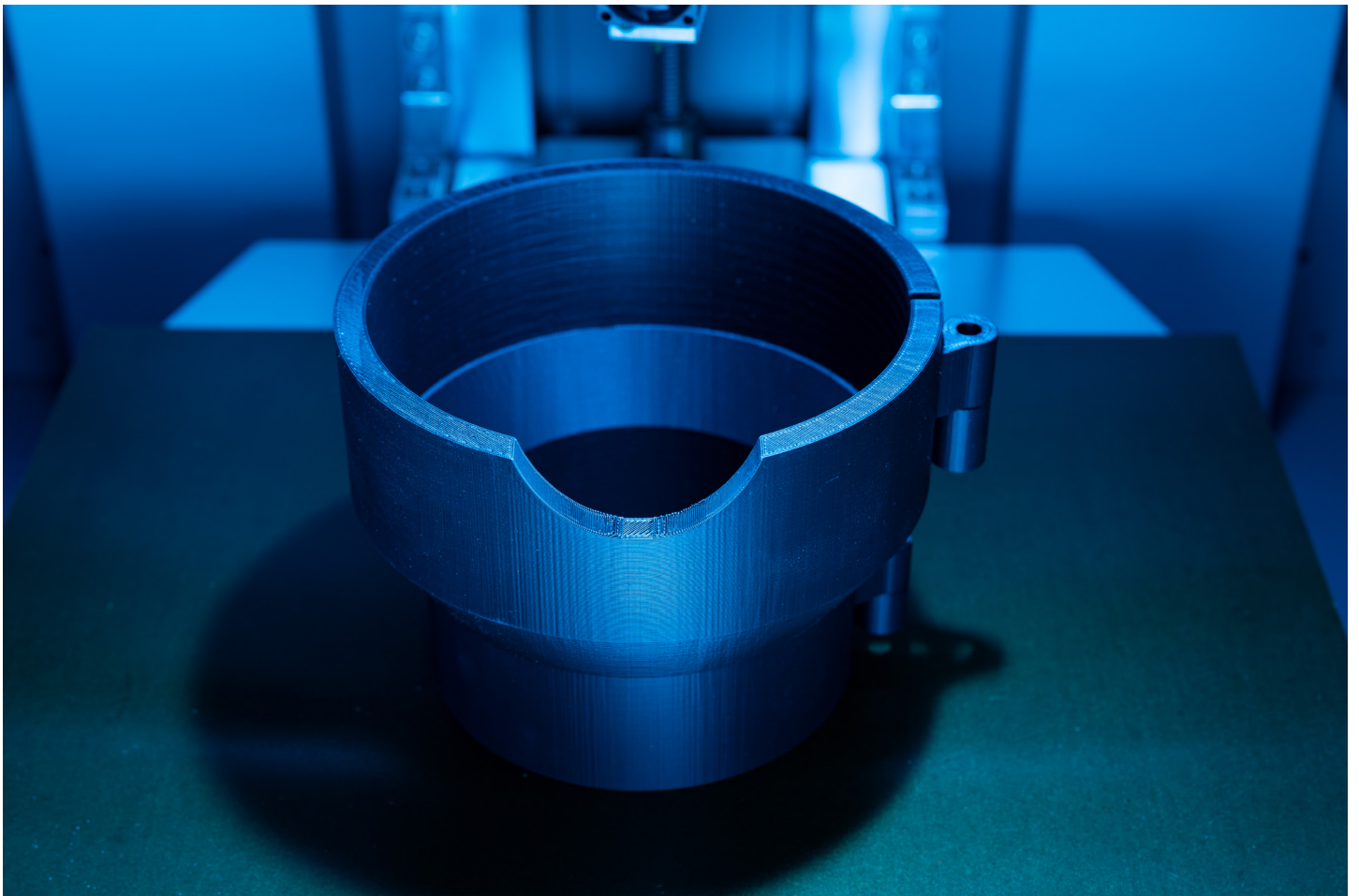
PEEK is known for its excellent chemical resistance to many organic and inorganic chemicals and for its exceptionally good resistance to hydrolysis in hot water.



SUPER POLYMERS

TOOLINGX CF

Roboze ToolingX CF is a carbon fiber reinforced thermoplastic composite material. It is lightweight and has exceptional thermal stability, chemical resistance, and is inherently self-extinguishing.



Roboze materials selection table















































































Key material properties are listed on a scale of suitability
All materials technical dashboards

● 6= Excellent ● 5=Very Good ● 4=Good ● 3=Average ● 2=fair ● 1=poor ● 0=Unsuited

Material property	Flexible	Elastic
ULTRA-PLA	3 ●	0 ●
STRONG-ABS	3 ●	0 ●
FLEX-TPU	6 ●	6 ●
PP	5 ●	0 ●
FUNCTIONAL-NYLON	4 ●	0 ●
Bio-based PA	4 ●	0 ●
Helios™PEEK 2005	3 ●	0 ●
PEEK	5 ●	0 ●
Carbon PEEK	3 ●	0 ●
ULTEM™AM9085F	6 ●	0 ●
PEKK	6 ●	0 ●
ToolingX CF	3 ●	0 ●
Carbon PA PRO	4 ●	0 ●

The table below gives an overview of some key material properties of Roboze materials and their suitability dependent on what kind of material properties are most important to you.

from 0 to 6, where 0 is least suited and 6 is most suited.
 sheets are available on request.

Impact resistance	Heat resistance	Dimensional stability at high temperatures	Chemical resistance	Mechanical Properties	Composite
3 	3 	3 	3 	3 	0 
5 	4 	4 	5 	4 	0 
6 	4 	4 	4 	3 	0 
6 	3 	3 	6 	3 	0 
4 	5 	5 	5 	5 	0 
4 	6 	6 	5 	6 	6 
3 	5 	5 	6 	5 	6 
4 	4 	4 	6 	4 	0 
3 	6 	6 	6 	6 	6 
6 	5 	5 	4 	3 	0 
5 	3 	3 	5 	4 	0 
3 	2 	2 	5 	5 	6 
3 	1 	1 	3 	6 	6 



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