



Roboze



NCS TECHNOLOGIES

Authorized Roboze Reseller

Roboze ARGO 500

From prototyping to the production
of large-scale end-use parts

#PrintStrongLikeMetal

■ **Roboze Technology**

Roboze challenges standards in design, mechanical engineering, printing technology and material versatility, by developing new unique 3D printing technologies.

■ Why print with ARGO 500?

Cost and time optimization



To survive in this current cutthroat economic environment, characterized by greater and **stronger competitiveness**, businesses must financially outmuscle their main competitors.

For Roboze, the reduction of lead-time costs, and the optimization of resources by manufacturing industries are critical steps in **boosting productivity** and **gaining a competitive advantage** in the marketplace.

Roboze technology surpasses traditional methods thanks to the **high-level precision and versatility of its technical materials**, combined with its ability to significantly reduce the time and cost of prototyping, and the design of new components, or modifications to existing ones.

■ Why print with ARGO 500?

Precision and reliability



Roboze raises the bar for FFF 3D printing systems, producing unmatched precision: the combination of **Patented Beltless technology**, and electronics, allow for the printing of durable parts with **10-micron mechanical tolerances**.

■ Roboze Beltless System

Accuracy for FFF 3D printing technology - Patented

The Beltless System uses **helical racks** and **pinions** in hardened steel as components of motion transmission. This coupling, with its high efficiency and easy maintenance, guarantees **positioning accuracy** of less than $\pm 10 \mu\text{m}$ and **movement repeatability** of $\pm 5 \mu\text{m}$, ensuring a cumulative error close to zero even for long distances.

What are the advantages?

- More accurate system than other components on the market;
- Reducing the risk of printing failure;
- It is not subject to long-term distortions;
- Repeatability of each print even over the long term;
- User-friendly maintenance.



■ Versatility of 3D printing materials

Accelerate time-to-market

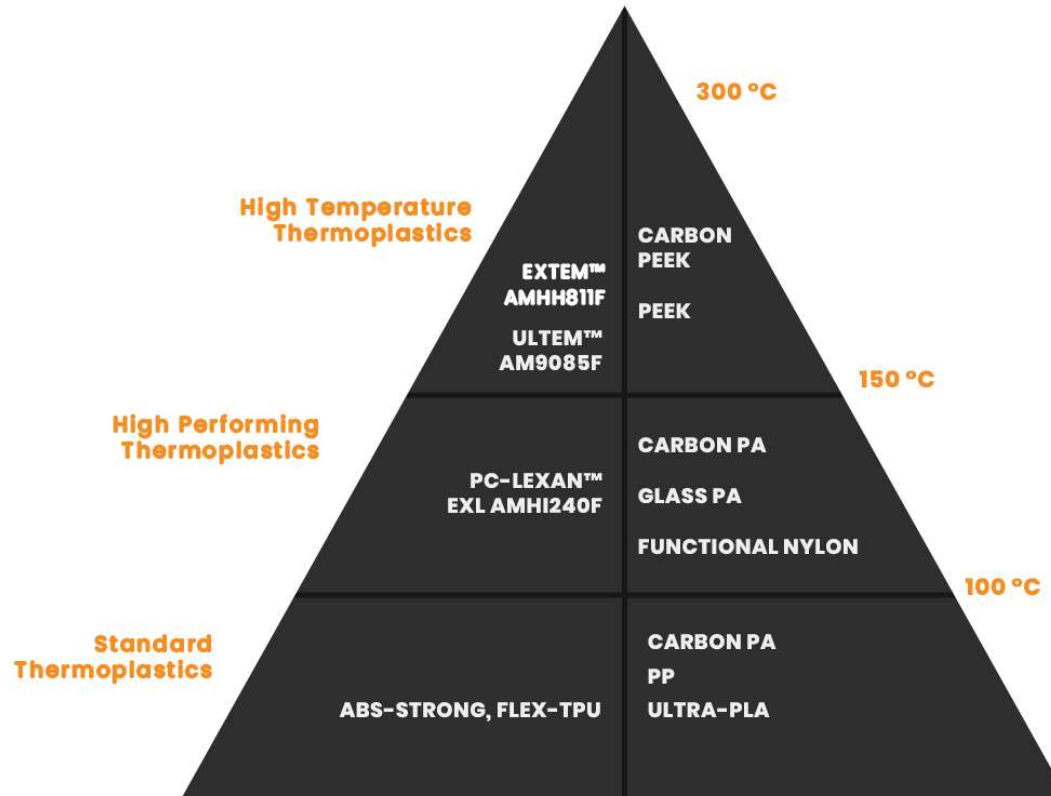
The **versatility** of Roboze **high performing materials** gives designers and end users unlimited possibilities for quick prototyping and end-use parts with unmatched accuracy.

With **12 materials**, including high temperature and composite polymers, Roboze opens up **new market opportunities** for its customers guaranteeing stability and made in Italy mechanical quality.



■ Versatility of 3D printing materials

Roboze polymers pyramid



■ ARGO 500

Additive Manufacturing solution



ARGO 500 is the result of a deep analysis of the market needs, of intensive research and strategic partnerships with the best players of the additive manufacturing world.

The machine allows the production of finished parts with a 500x500x500mm build plate in high performance technopolymers:

- PEEK, ULTEM™AM9085F, CARBON PA and CARBON™PEEK.
- 10 micron tolerances and 5000 mm/min printing speed.

Get ready to produce strong like metal parts!

■ ARGO 500

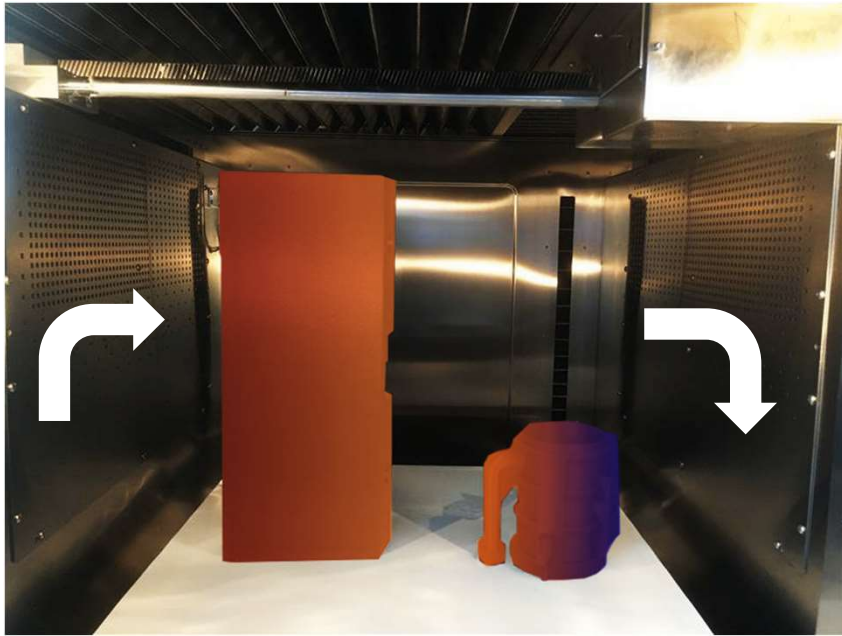
Uniqueness points: Heated Chamber



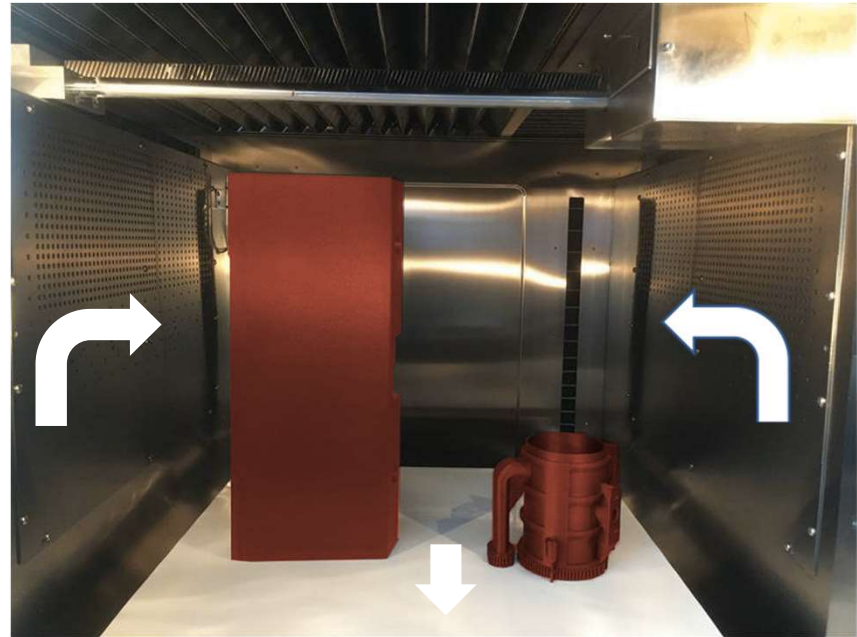
A **controlled heated chamber**, capable to reach **180 °C (356°F)** in just over an hour, allows ARGO 500 to reduce the thermal shock of the material it is extruding and to cool it down more slowly in order to attenuate the mechanical stress and any residual tension, caused by the thermal treatment.

■ Heated Chamber

Comparison



COMPETITORS' SYSTEMS



ROBOZE SYSTEM

■ ARGO 500

Uniqueness points: HVP Extruder – patent pending – and double extruder system

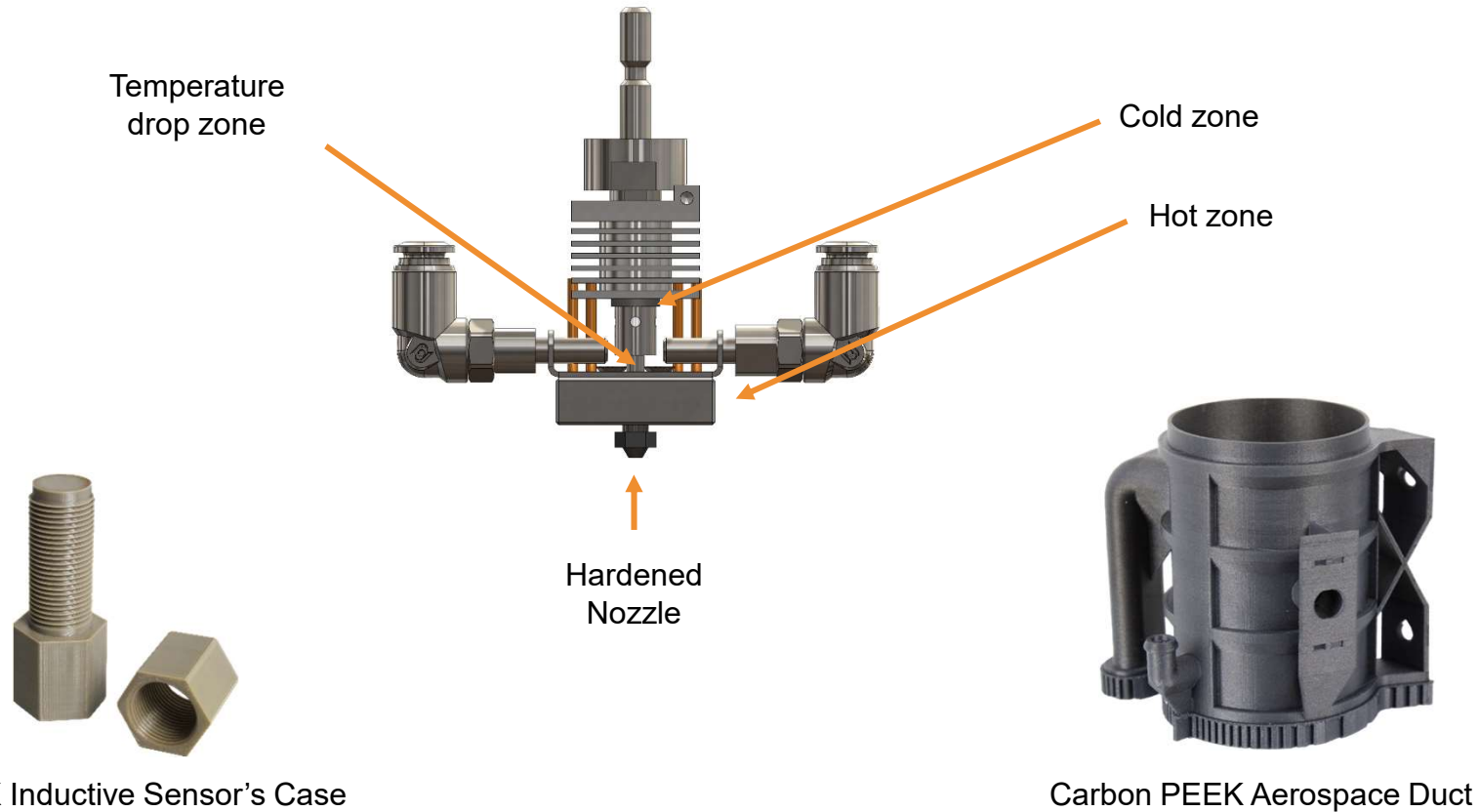


The **HVP Extruder**, designed to reach **450°C (842°F)** for the extrusion of composite materials and high-temperature super polymers, in ARGO 500 presents a **double gear system** to better dissipate heat, reduce wear phenomena, get the feeding system stronger and optimize the pressure on the filament.

Moreover, the introduction of the **double extruder system** lets you print more complex parts thanks to the use of a soluble support material, available on the Production systems.

■ Extrusion System

HVP Extruder: to facilitate the extrusion of high viscosity polymers



■ ARGO 500

Uniqueness points: Build plate – automatic leveling and vacuum system



ARGO 500's build plate presents an **automatic leveling system** that, in addition to eliminate any external interventions, increases the repeatability of the parts even if they are produced in different cycles or time.

With the aim of guaranteeing the **perfect adhesion** of the parts and the buildplate, Argo 500 is equipped with the **vacuum system** that, in addition to simplify and speed up the 3D printing operations, offers greater stability even in case of larger prints, guaranteeing the planarity of the printed component.

■ Quality Process Automation

Automatic Build Plate Leveling and Z Calibration



Automatic calibration of the Z axis

ADVANTAGES

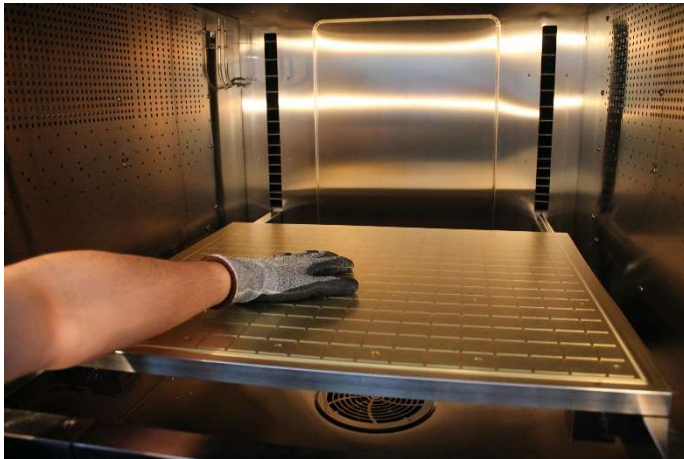
- Reduced printer's set-up time
- Reduced manual operations
- Greater printing accuracy
- Process repeatability
- Possibility to print on small portions of the buildplate or on flat objects



Automatic buildplate leveling

■ Quality Process Automation

Vacuum System



ADVANTAGES

- Special polymeric film for each filament
- Optimized first layer adhesion
- Easier and faster operations
- Low tolerances
- No deformations at high temperatures



Carbon PA
Jigs&Fixtures Application



Built Sheets

■ ARGO 500

Uniqueness points: n.4 High Temperature Filament Dryer

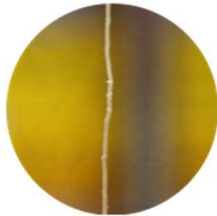
One of the most common properties of plastics used in 3D printing is the **hygroscopy**, that is the capability to absorb moisture from the external environment.

Effects on 3D printing:

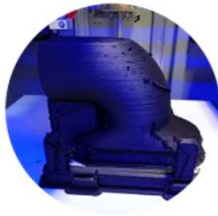
Poor adhesion



Bubbles



Bad surface



Stringing



Warping



Oozing



■ How Roboze solves them

DRYING PROCESS

1. Heat source
2. Transfer of the water molecules from the core to the surface of the filament
3. Water molecules removal

■ HT Filament Dryer

Time and Waste Reduction

Filament spools are housed in a dedicated environment and separated into **4 HT Filament Dryers**: 2 for primary material and 2 for support material. This system, together with the **automatic filament loading**, end of filament and residual material sensors, prevent the loss of print in the event of spool exhaustion. The second HT Filament Dryer activates automatically at the end of the first in order to minimize waste and save time.

Some features:

- Maximum temperature: 120 °C - 248 °F
- System for the automatic loading of the filament, equipped with End of filament sensors;
- User friendly



AL7

■ Print Log System

Everything under your control



ADVANTAGES

- Control of device operations
- Anomalies identification
- Control of printing parameters and printing process
- Certification of printed parts and process repeatability

AL7

METTI UN BOLLINO AD INDICARE QUALITÀ

Alessio Lorusso, 5/10/2020

■ ARGO 500

Overview

Production Series	
Argo 500	
Build Volume	500 X 500 X 500 mm 19.7 x 19.7 x 19.7 in
Extruder Number	2
Extruder Temperature	450 °C - 842 °F
Heated Chamber	180 °C - 356 °F
Vacuum Plate	Yes
Mechatronic Tolerances X-Y	10 µm - 0.4 µin
Accessories	N.4 Integrated Roboze HT Dryers; Roboze HT Oven (optional*);
Materials	
ULTRA-PLA	X
STRONG-ABS	X
FUNCTIONAL-NYLON	X
ABS-ESD	X
GLASS PA	X
CARBON PA	X
CARBON PP	X
PP	X
PC-LEXAN™ AMHI240F	X
PEEK	X
CARBON PEEK	X
ULTEM™AM9085F	X
PRINT SPEED	5000 mm/min - 197 in/min

*The choice to complete the Heat Treatment process adding the HT Oven is optional



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