



RENEW YOUR PART MANUFACTURING

WWW.MINIFACTORY.FI





miniFactory is an industrial 3D printer manufacturer driven by passion for high-performance polymer 3D printing and the best results for industry class 3D printed parts.

miniFactory Ultra is our third endeavour into 3D printing. A culmination of our years of experience, industry know-how and our perfected madness for 3D printing.

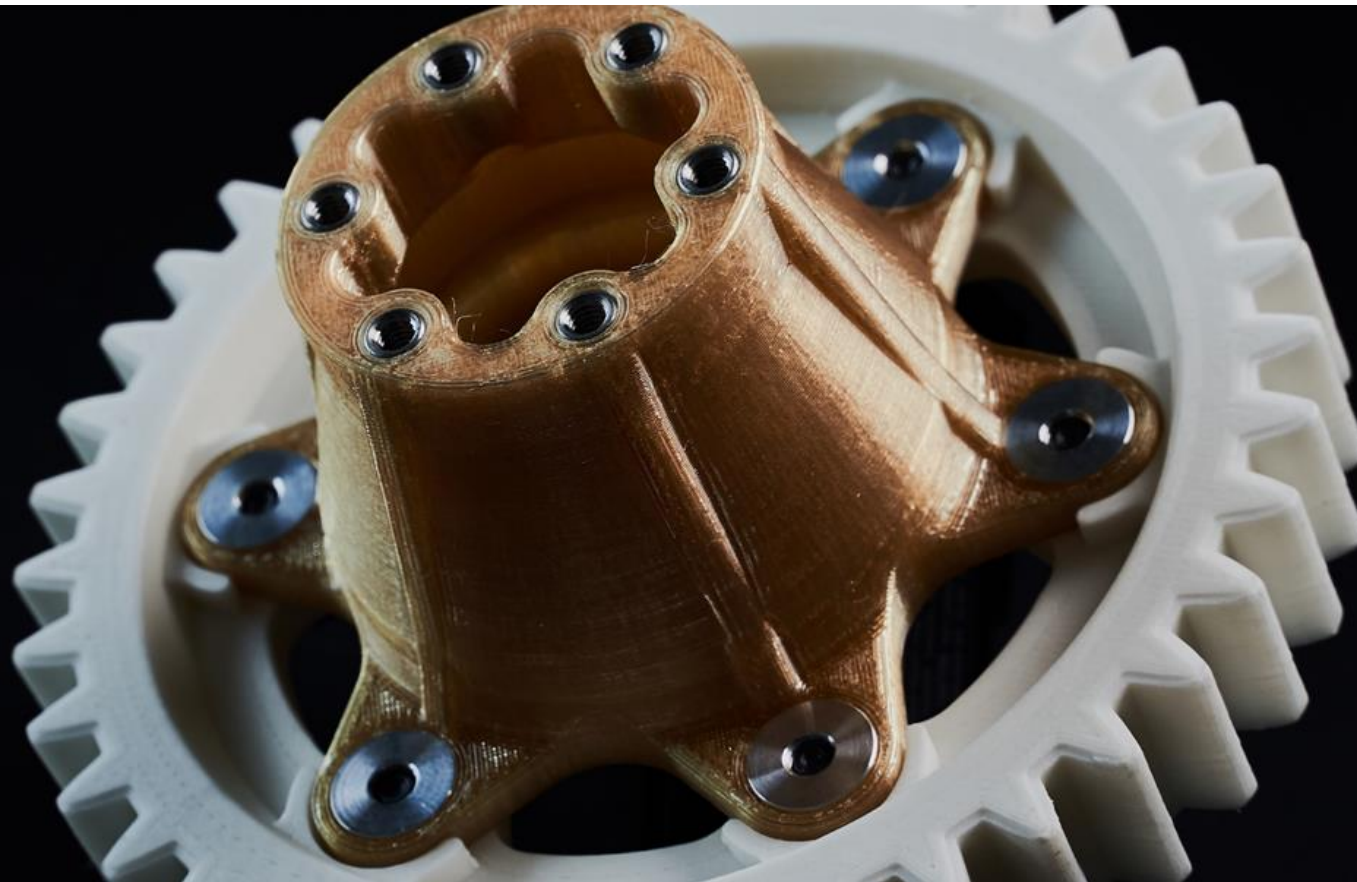
miniFactory is a Finnish company, located in Seinäjoki, Western Finland. miniFactory Oy Ltd has been founded in 2012.

We are the reliable partner for anyone seeking for a complete high-performance 3D printing system.

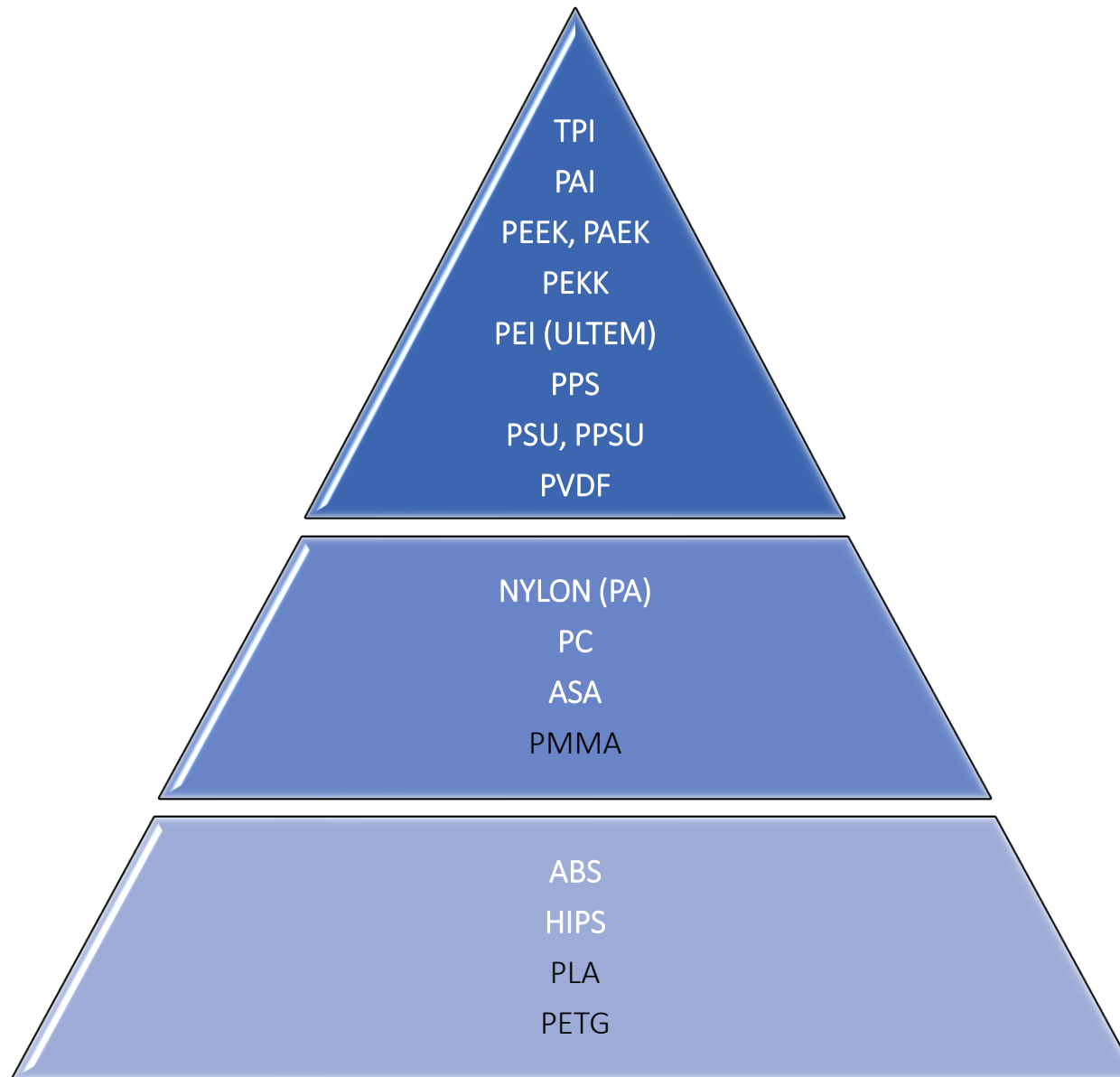


MATERIALS AND APPLICATIONS

WWW.MINIFACTORY.FI



WIDE RANGE OF POLYMERS



* Written in white are printable with miniFactory Ultra

ADVANTAGES OF ULTRA POLYMERS

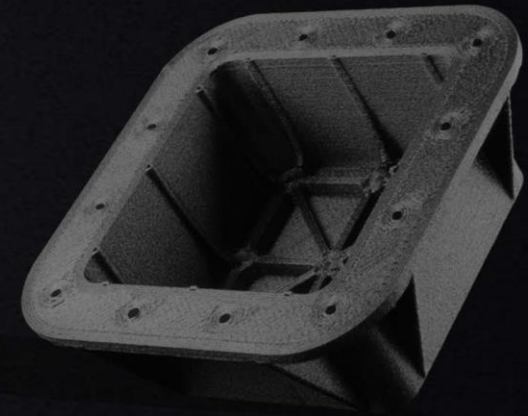
- ❖ WITHSTANDS HIGH OPERATING TEMPERATURES
 - ❖ WITHSTANDS TEMPERATURE FLUCTUATIONS
 - ❖ SUPERIOR MECHANICAL PROPERTIES
 - ❖ EXCELLENT CHEMICAL RESISTANCE
 - ❖ COMBINATION OF HIGH FATIGUE STRENGTH AND DUCTILITY
 - ❖ RESISTANCE TO WEAR AND LOW COEFFICIENT OF FRICTION
-
- ❖ REDUCE WEIGHT BY REPLACING METAL PARTS
 - ❖ DURABILITY IN EXTREME ENVIRONMENT CONDITIONS
 - ❖ LUBRICANT FREE OPERATION
 - ❖ LOWER NOISE
 - ❖ LONGEVITY - EXTENDED COMPONENT LIFE



CARBON-PEEK

PEEK (Polyetheretherketone) is a semi-crystalline thermoplastic with excellent mechanical and chemical resistance properties.

- ❖ High strength and toughness
- ❖ Great abrasion and wear resistance
- ❖ Excellent hydrolysis resistance
- ❖ Low smoke and toxic gas emissions
- ❖ Low thermal expansion rate



MATERIAL APPLICATIONS:

- Bearing retainers
 - Gears
 - Bushings
- Oil and gas processing equipment
 - Seals
- Aircraft hardware and fasteners

TRUSTED BY:
OIL&GAS & AEROSPACE

ULTEM AM1010F

ULTEM AM1010F (Polyetherimide) filament is used in applications that require high heat resistance, high strength or excellent electrical insulation properties.

- ❖ Heat resistance up to 210°C
- ❖ Excellent electrical insulation properties
 - ❖ Good chemical resistance
- ❖ Inherent flame resistance (UL94 V-0)
 - ❖ FDA approved



MATERIAL APPLICATIONS:

- Electrical insulation parts
- Electrical switches and controls
 - Capacitors
- Composite Lay-Up tooling
- Custom tools for metal and plastic
 - FDA applications

TRUSTED BY:
ELECTRONICS & TOOLING

ULTEM AM9085F

ULTEM AM9085F (Polyetherimide) filament is based on a polyetherimide blend for use in the aerospace market. It is ideal for the aerospace, marine and railway.

- ❖ Heat resistance up to 170°C
- ❖ Certified for aircraft components
- ❖ FST compliant with an OSU rating of 55/55
- ❖ Inherent flame resistance (UL94 V-0)
- ❖ Fire Protection of Railway Vehicles (EN45545-2)



MATERIAL APPLICATIONS:

- Interior components
- Ventilation system components
 - Cable ducts
- Latches
- Throttle bodies
- Thermostat housings

TRUSTED BY:
AEROSPACE & DEFENCE

PEKK-A

PEKK-A (PolyEtherKetoneKetone) offers extremely low outgassing, high mechanical properties and exceptional resistance to extreme environments.

- ❖ Heat resistance up to 150°C
- ❖ Extremely low outgassing
- ❖ Inherent flame resistance (UL94 V-0)
- ❖ Fire Protection of Railway Vehicles (EN45545-2)
- ❖ Low FST (Flame, Smoke, Toxicity)
- ❖ Comparable to Stratasys ANTERO800NA material



MATERIAL APPLICATIONS:

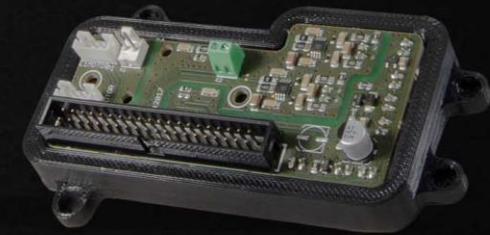
- Railway interior parts
 - Space grade parts
 - Trays and packaging
- EMI/RFI shielding
- Technical insulation parts
 - Ducting

TRUSTED BY:
RAILWAY & SPACE

ESD-PEKK

ESD-PEKK (Electrostatic Dissipative PolyEtherKetoneKetone) is an aerospace grade thermoplastic with static dissipative properties.

- ❖ Heat resistance up to 150°C
- ❖ 10^4 to 10^9 ohm surface resistivity on 3DP sample using concentric ring test method
- ❖ Consistent surface resistivity and low particulate contamination
- ❖ Low outgassing - ideal for space related applications
- ❖ Excellent resistance to a broad range of chemicals



MATERIAL APPLICATIONS:

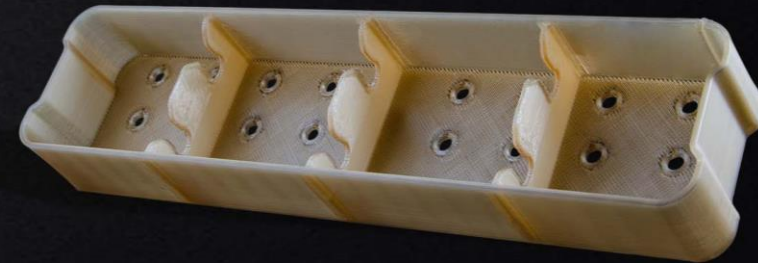
- ESD-safe parts
- Low-volume production parts
 - Functional prototypes
- ESD-safe jigs/fixtures
- Aerospace / space vehicle components
 - Electronics industry parts

TRUSTED BY:
SPACE & ESD-SAFE

PPSU

PPSU (Polyphenylsulfone) is known for its excellent resistance to chemicals and heat. This makes it optimal choice for medical devices requiring repeated sterilization.

- ❖ Heat resistance up to 220°C
- ❖ Excellent chemical and thermal resistance
- ❖ Sterilization capable – including EtO gas, radiation, steam autoclaving, plasma etc.
- ❖ Excellent hydrolysis resistance
- ❖ Exceptional toughness and durability



MATERIAL APPLICATIONS:

- Sterilization trays and cases
- Surgical instrument handles
- Clean-room compatibility parts
 - Hot water fittings
 - Plumbing manifolds
- Low-volume injection molds

TRUSTED BY:
MEDICAL & AUTOMOTIVE

CARBON-PA

Carbon PA (Polyamide) is ideal for demanding racing and engineering structural applications that require robust performance at elevated temperatures.

- ❖ Heat resistance 150°C
- ❖ PA6/66 – up to 100% stronger than PA11/PA12
 - ❖ Strong and durable
 - ❖ High dimensional stability



MATERIAL APPLICATIONS:

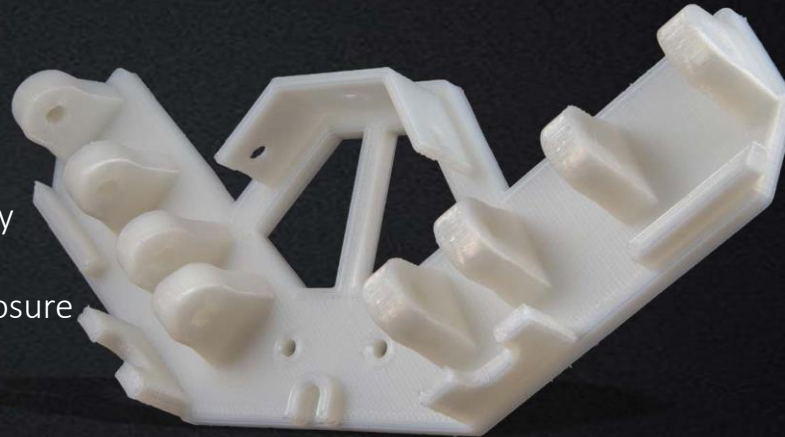
- Racing applications
- Protective and supporting sports gear
- High performance functional parts
- Manufacturing jigs and fixtures
 - Light weight applications
- High-end engineering applications

TRUSTED BY:
RACING & ENGINEERING

PVDF

PVDF (Polyvinylidene Fluoride) is a semi-crystalline fluoropolymer with excellent abrasion resistance and outstanding weatherability.

- ❖ Heat resistance up to 150°C
- ❖ Good resistance to acids and solvents
- ❖ Extremely high electrochemical stability
- ❖ Great abrasion and wear resistance
- ❖ Outstanding resistance to sunlight/UV exposure



MATERIAL APPLICATIONS:

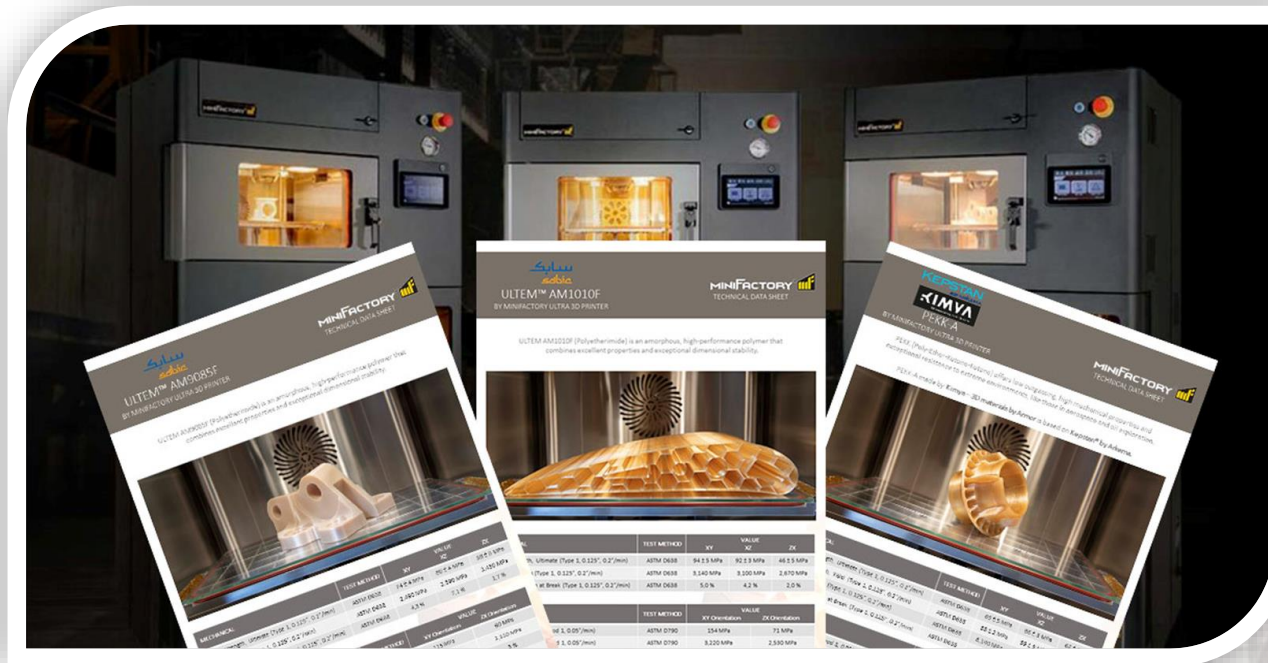
- Semiconductor applications
- Wear resistance applications
 - Electrical insulations
- Food / Beverage processing
- Chemical process equipment
- UV resistance applications

TRUSTED BY:
SEMICONDUCTOR & CHEMICAL

CERTIFIED MATERIALS

- VALIDATED PRINTING PROFILES.
- POSSIBILITY TO USE 3RD PARTY MATERIALS

TRUSTED BY WORLD LEADING MATERIAL MANUFACTURERS:





MINIFACTORY ULTRA 3D PRINTER

RENEW YOUR PART MANUFACTURING

CHAMBER TEMPERATURE	250°C
PLATFORM TEMPERATURE	250°C
EXTRUDER TEMPERATURE	470°C
MECHANICS	AC-SERVO MOTORS & BALL SCREWS CLASS C5
REPEATABILITY	0,025MM/400MM
EXTRUDERS	2, SEPARABLE EXTRUDERS
BUILD VOLUME	330MM X 180MM X 180 MM
MATERIALS	PEI, PEKK, PAEK, PEEK, PPSU, PPS, PVDF, PA, PC, ABS + WIDE RANGE OF GF/CF COMPOSITES AND ESD POLYMERS
BUILD PLATFORM	INTERNAL VACUUM SYSTEM
LEVELING	FULLY AUTOMATIC CALIBRATION
UI	7" TOUCH SCREEN
SAFETY	PROTECTED WITH RCD
FILAMENT DIAMETER	ACTIVATED CARBON FILTERING
COOLING	1,75MM
SENSING	LIQUID COOLING & AIR COOLING
ACCESSORIES	JAM & RUNOUT SENSORS
	AARNI - PROCESS MONITORING SYSTEM
	HEATED FILAMENT CHAMBER
SLICING SOFTWARE	SIMPLIFY 3D
CERTIFICATION	CE
DEVICE MEASUREMENT	100 X 80 X 190CM
DEVICE WEIGHT	320KG
POWER REQUIREMENT	400V/16A 3-PHASE

OPEN MATERIAL SYSTEM

GET ACCESS TO THE WIDEST MATERIAL RANGE ON THE MARKET WITH ULTRA 3D PRINTER.

MINIFACTORY ULTRA 3D PRINTER HAS ADVANCED HEATED CHAMBER UP TO 250C WHICH UNLOCKS THE WHOLE MATERIAL RANGE FOR YOU.

FROM COMMODITY AND ENGINEERING POLYMERS ALL THE WAY UP TO THE MOST DEMANDING HIGH-PERFORMANCE POLYMERS AND COMPOSITES ARE AVAILABLE. MATERIAL RANGE IS MANY TIMES WIDER THAN IN “CLOSED SYSTEMS” OR IN THE SYSTEMS WITH LOWER CHAMBER TEMPERATURE.

- ULTEM1010, ULTEM9085, PPSU, PSU, PPS, PEEK, PAEK, PEKK, PVDF, PC, PA, ABS AND MANY MORE PURE POLYMERS.
- CF-ULTEM, CF-PEKK, CF-PEEK, ESD-PEEK, GF-PA AND MANY MORE COMPOSITES.



HEATED CHAMBER UP TO 250°C – WHY?

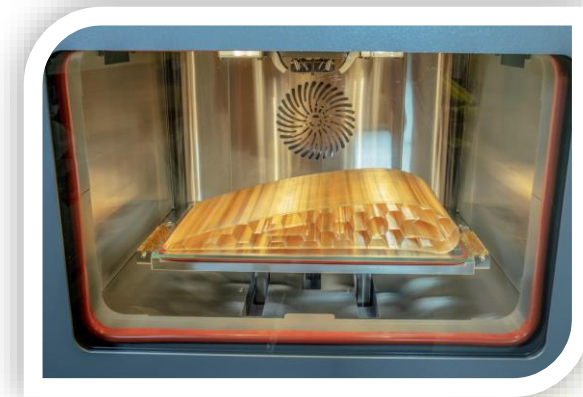
EXTREMELY HIGH TEMPERATURE IN THE CHAMBER UNLOCKS THE WIDEST MATERIAL RANGE ON THE MARKET AND ENSURES ULTIMATE STRENGTH FOR PRINTED PARTS.

THE OPTIMUM TEMPERATURE FOR THE HEATED CHAMBER IS GLASS TRANSITION TEMPERATURE (TG) OF THE USED POLYMER. MINIFACTORY ULTRA HEATED CHAMBER CAN REACH 250°C.

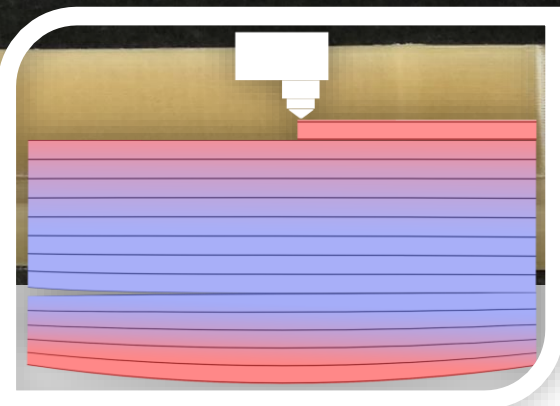
THE HEATED CHAMBER IS THE MOST IMPORTANT FEATURE WHEN LOOKING FOR THE BEST RESULT.

OPTIMUM CHAMBER TEMPERATURES FOR SOME HIGH-PERFORMANCE POLYMERS:

- PPSU - 220°C
- ULTEM 1010 - 217°C
- ULTEM 9085 - 185°C
- PEKK-A - 160°C



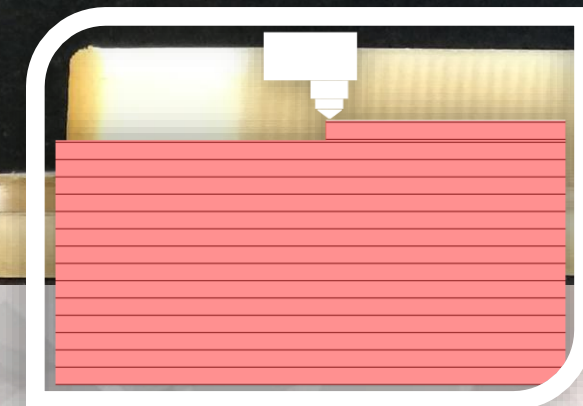
PRINTING CHAMBER TEMPERATURE IS CLEARLY **BELOW** POLYMERS TG



- **POOR** LAYER ADHESION
- **MEDIUM** MECHANICAL STRENGTH
- **HIGH** MECHANICAL STRESS
- **HIGH** WARPING / CRACKING



WITH THE MINIFACTORY ULTRA 3D PRINTER
PRINTING CHAMBER TEMPERATURE IS **ABOVE** POLYMERS TG



- **GREAT** LAYER ADHESION
- **HIGH** MECHANICAL STRENGTH
- **LOW** MECHANICAL STRESS
- **LOW** WARPING / CRACKING

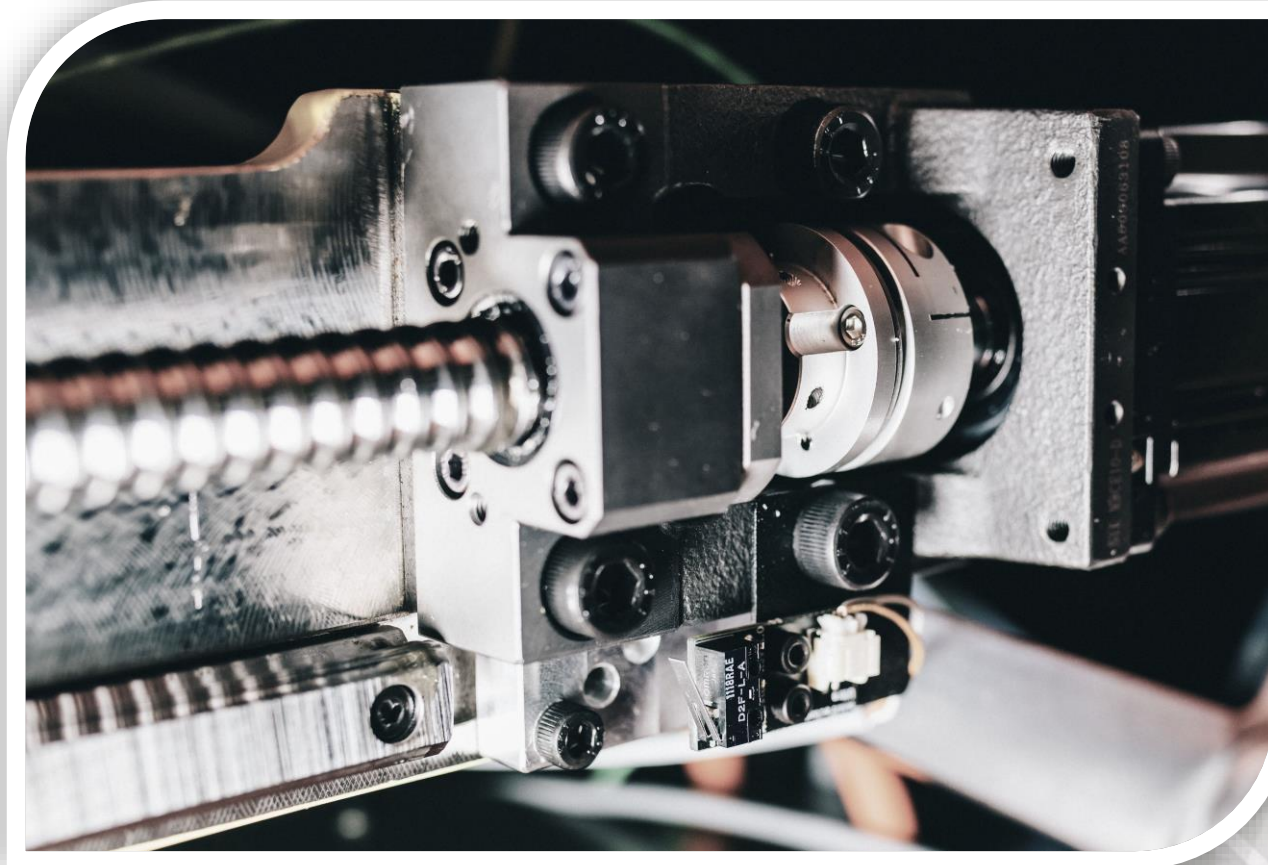


SERVO DRIVEN TECHNOLOGY + BALLSCREWS

MINIFACTORY ULTRA IS ONE THE MOST ACCURATE FFF 3D PRINTER WITH REPEATABLE PRINTING, BASED ON THE INDUSTRIAL LEVEL TECHNOLOGY.

PRESICION AND STABILITY WITH HIGH-END SERVO MOTORS, BALL SCREWS AND LINEAR GUIDES ENSURE LARGE, DIMENSIONALLY ACCURATE AND PRECISELY REPEATABLE PRINTS TIME AFTER TIME. NOT ANY LOOSING/ADJSUTABLE BELTS.

BALL SCREWS ARE CLASS C5. REAL AC SERVO MOTORS ENCODER RESOLUTION IS 10 000 CPR AND MECHANICAL CUMULATIVE POSITIONING ERROR 0.025MM PER 400MM.



HEATED FILAMENT CHAMBER – WHY?

HIGH-PERFORMANCE POLYMERS ARE EXTREMELY SENSITIVE FOR THE HUMIDITY. ULTRA'S HEATED FILAMENT CHAMBER ENSURES THE OPTIMAL CONDITION FOR YOUR MATERIALS.

WITH THE CAPABILITY TO STORE THE FILAMENTS UP TO 120°C AND MONITOR THE MOISTURE LEVEL, YOU WILL ALWAYS HAVE OPTIMAL CONDITIONS FOR PRINTING.

- TEMPERATURE UP TO 120°C TO PREVENT THE EFFECTS OF HUMIDITY TO THE FILAMENT.
- TEMPERATURE AND HUMIDITY ARE MONITORED BY AARNI TO KNOW THE ENVIRONMENT OF THE FILAMENT CHAMBER.

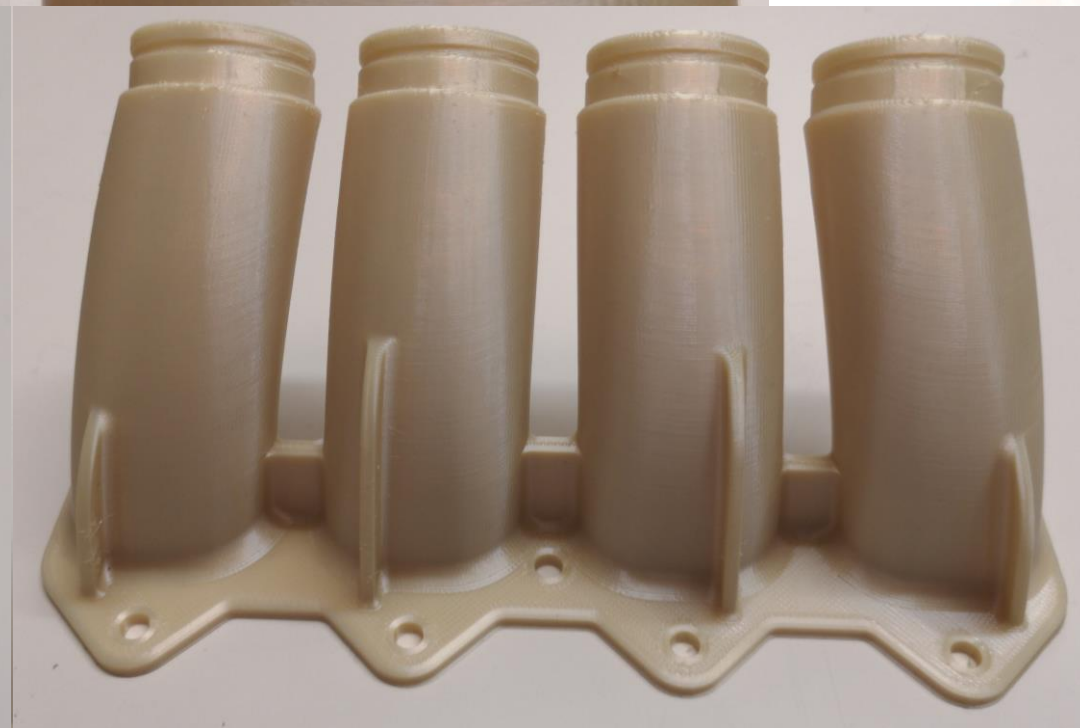




Without Heated Filament Chamber

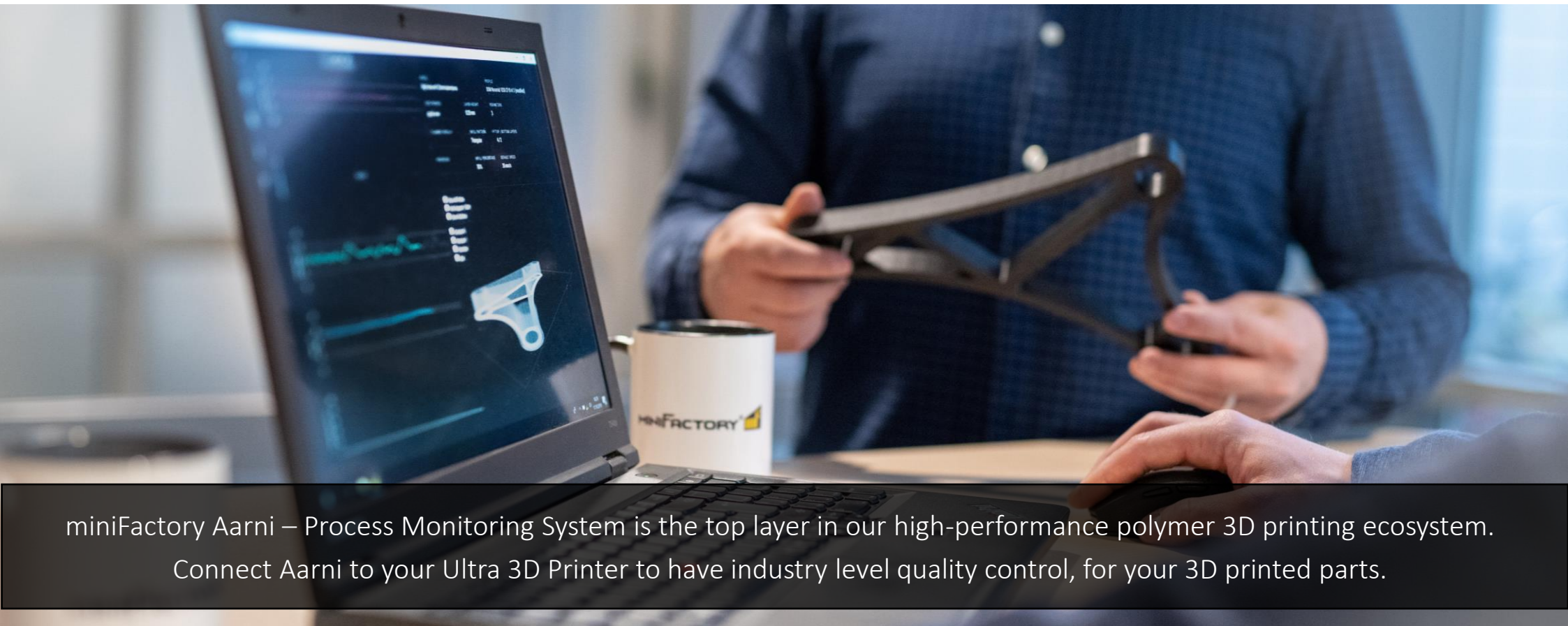


With Heated Filament Chamber





AARNI – PROCESS MONITORING SYSTEM



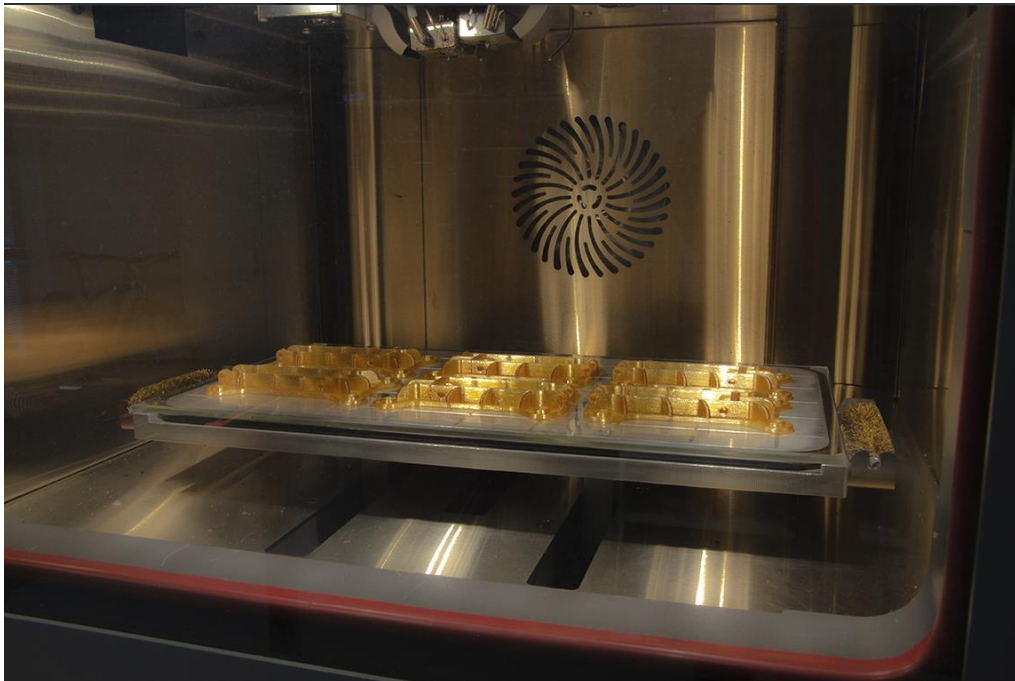
miniFactory Aarni – Process Monitoring System is the top layer in our high-performance polymer 3D printing ecosystem. Connect Aarni to your Ultra 3D Printer to have industry level quality control, for your 3D printed parts.

AARNI - PROCESS MONITORING SYSTEM WORKFLOW

1. PRINT THE PART

Print a part by using validated printing profile done by miniFactory. Use certified materials from world leading material suppliers.

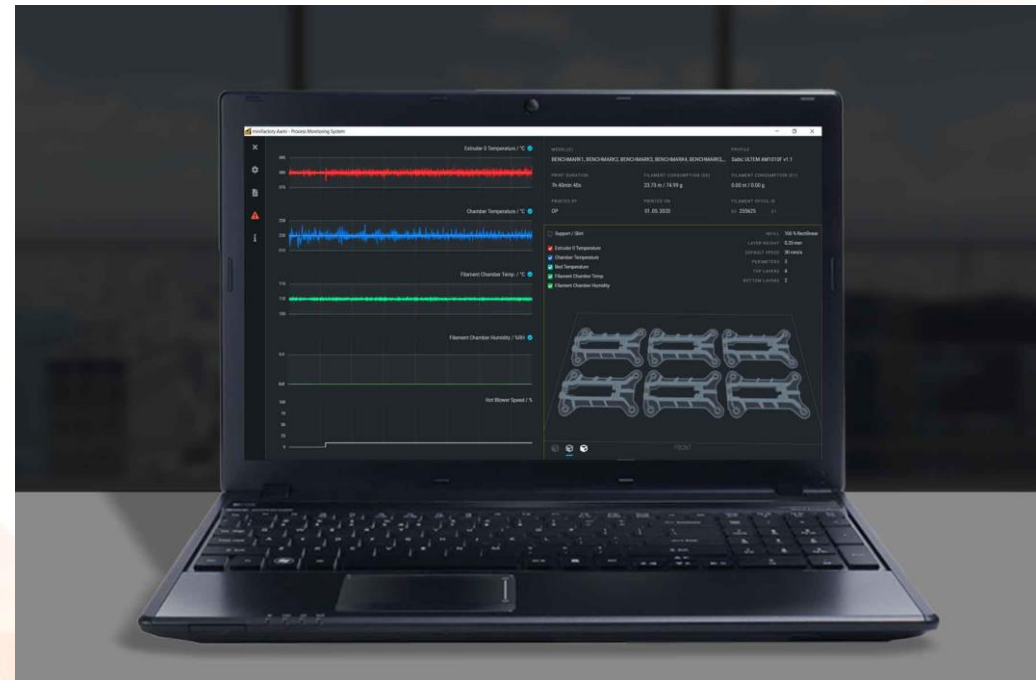
After the print job is done, a data file can be downloaded from the 3D printer.



2. OPEN THE DATA FILE IN AARNI SOFTWARE

Open the datafile with AARNI software which is installed on your computer. You have a clear overview of the workflow and the real printing environment.

You can also check the basic parameters used for the part



AARNI - PROCESS MONITORING SYSTEM

WORKFLOW

3. LAYER BY LAYER VISUALIZATION

Aarni visualizes the collected data with a 3D model and paragraphs, which makes understanding of the data easy.

Have a wireframe view inside your printed part and see how the part was made, line by line and layer by layer.



4. ENSURE THE PART PROPERTIES

Aarni visualizes the exact points and lines if the process has gone beyond the set limits.

With this information the operator can evaluate the critical points of the part and ensure that it meets the quality standards.



AARNI - PROCESS MONITORING SYSTEM WORKFLOW

5. FILL THE INFORMATION

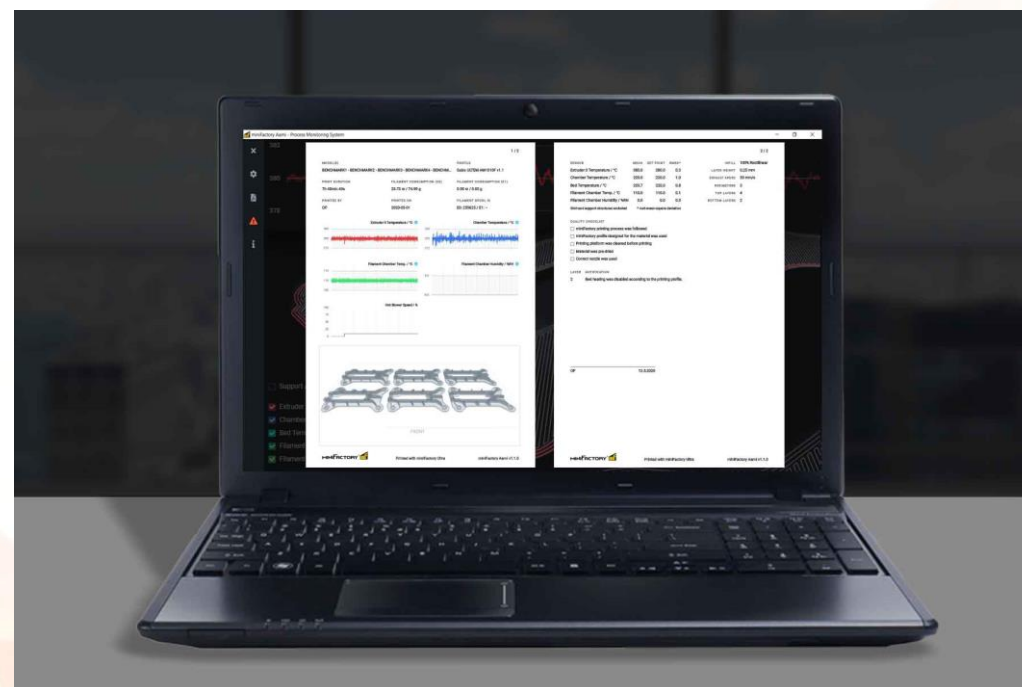
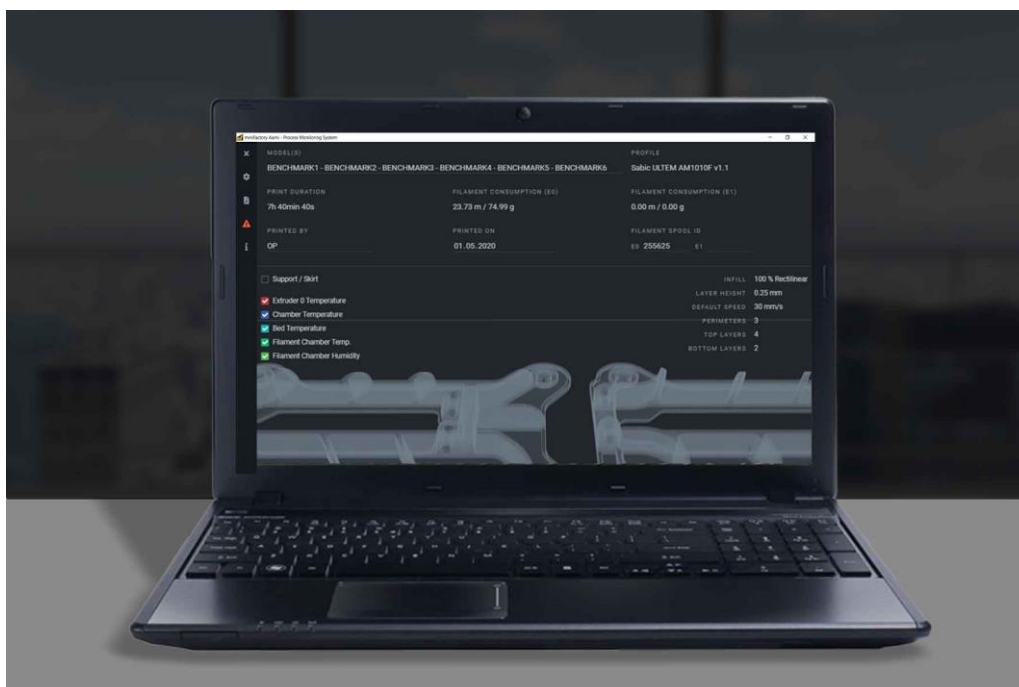
The operator may fill the information such as printing date, material lot number in order to maintain the full traceability to the printed part.

Additional information can be added if needed.

6. PRINT THE DOCUMENTATION

With Aarni you can create a document that highlight the whole printing process.

This document has the same intuitive visualization done with 3D model and paragraphs.



CONTACT DETAILS

WWW.MINIFACTORY.FI



miniFactory Oy Ltd

KAMPUSRANTA 9

60320 SEINÄJOKI

FINLAND

VAT ID: FI25182357

WWW.MINIFACTORY.FI

DISCLAIMER: INFORMATION AND RECOMMENDATIONS CONTAINED IN THIS DOCUMENT ARE GIVEN IN GOOD FAITH. HOWEVER, MINIFACTORY MAKES NO EXPRESS OR IMPLIED REPRESENTATION, WARRANTY OR GUARANTEE (i) THAT ANY RESULTS DESCRIBED IN THIS DOCUMENT WILL BE OBTAINED UNDER END-USE CONDITIONS, OR (ii) AS TO THE EFFECTIVENESS OR SAFETY OF ANY DESIGN OR APPLICATION INCORPORATING MINIFACTORY'S MATERIALS, PRODUCTS, SERVICES OR RECOMMENDATIONS. MINIFACTORY SHALL NOT BE RESPONSIBLE FOR ANY LOSS RESULTING FROM ANY USE OF ITS MATERIALS, PRODUCTS, SERVICES OR RECOMMENDATIONS DESCRIBED IN THIS DOCUMENT.