
INDUSTRIAL 3D PRINTING WITH COMPOSITES → IS NO LONGER JUST A PROMISE
PROM IS 500
→ COMPOSITE
→ INDUSTRIAL
→ HIGH TEMPERATURE


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EASIER, FASTER AND CHEAPER MANUFACTURING PROCESS WITH HIGH-STRENGTH PARTS FROM CONTINUOUS FIBER REINFORCED COMPOSITES

➔ large build volume: 600mm x 420mm x 300mm;

➔ Bosch Rexroth CNC based logic with high accuracy;

➔ high temperature plastics (up to 400°C) as a matrix: PEEK, PEI;

➔ up to 160°C heated chamber temperature;

➔ up to 4 interchangeable print heads: CFC (Composite Carbon Fiber) and FFF (plastic);

➔ printing composite lattices — optimal structures for composites: lower weight, price and production time of a part;

➔ automatic calibration system;

➔ material storage with temparute & humidity control;

➔ sensors for the material flow and presence;

➔ made for 24/7 runs in a factory environment.

UP TO 4 INTERCHANGABLE PRINT HEADS

Matrix:
FFF PA
CFC PA

Reinforcing:
CCF 1k, 3k

Matrix:
FFF PEI
CFC PEI

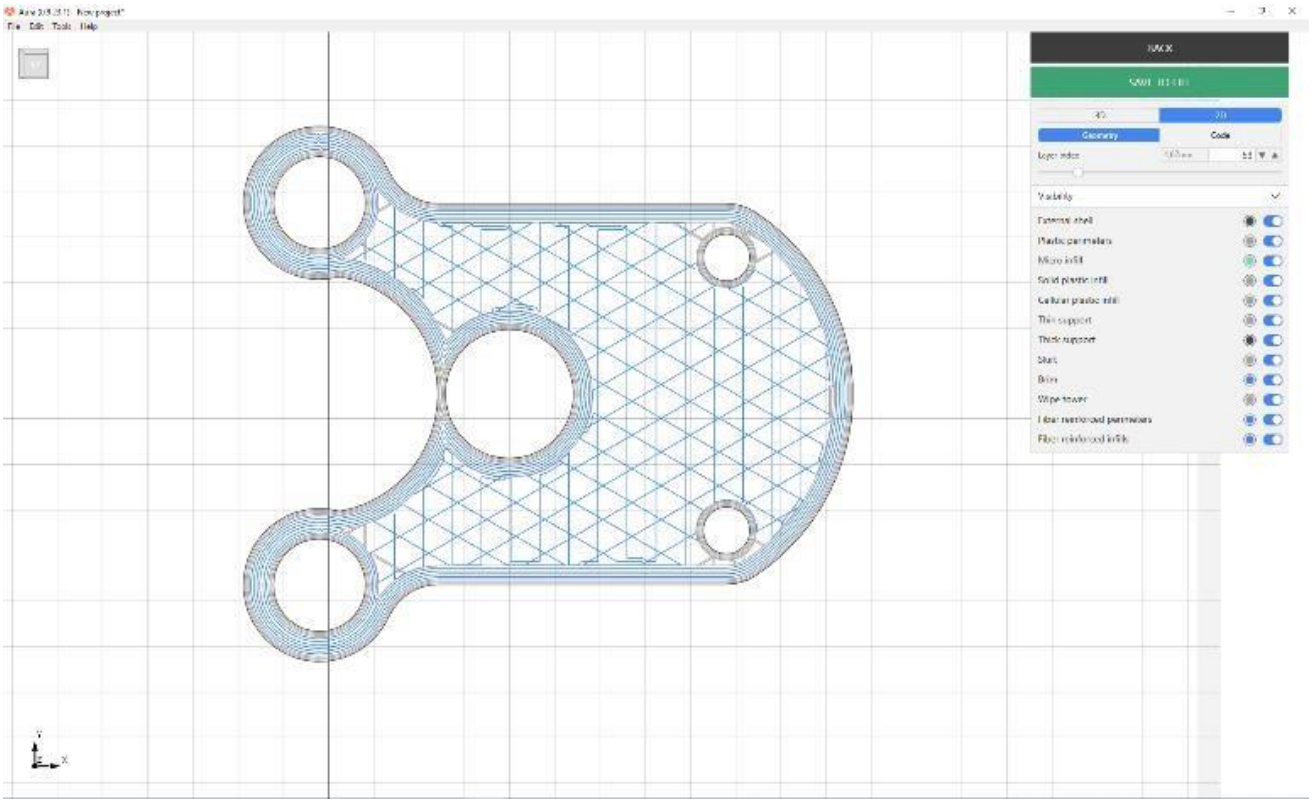
LOW TEMPERATURE

HIGH TEMPERATURE

	CCF 1k LT	CCF 3k LT	CCF 3k HT	CCF 1k HT
Effective diameter		0.49 mm		0.28 mm
Volume fraction	60%			
Elastic modulus	140 GPa			
Tensile strength	2150 MPa			
Minimum curvature radius /minimum wall thickness	1 mm	1.7 mm		1 mm
Minimum distance between CF	0.5 mm	0.85 mm		0.5 mm
Minimum CF layer height	0.2 mm	0.4 mm		0.2 mm
Process temperature	190°-280°C		350°-400°C	

SOFTWARE AURA

Proprietary slicing engine for toolpath generation for ProM IS 500



→ built-in profiles: verified printing settings for a range of materials;

→ combining micro and macro layers: use different layer thicknesses for infills and external shells;

→ printing with multiple extruders, using different extruders for different entities (perimeters, infills, support, etc);

→ complex trajectories of fiber laying including lattice reinforced infills (rhombic, isogrid, anisogrid);

→ supporting STL and CAD formats: .stp, .3ds, .obj;

→ different reinforcing schemes for different layer groups or/and different models;

→ model saved on a local PC;

→ command line interface (CLI) for automated part processing;

→ layer masks.

Note: Manufacturer can provide Pilot customer the new beta version of the software for the tests

AURA.CONNECT

Network system for the production process maintenence. Local network deployed server.

→ connecting multiple printers to the single server;

→ multiuser access for managing printers and print jobs;

→ local storage for libraries of parts, projects, G-codes;

→ browser-based client, supports Google Chrome, Mozilla Firefox, Edge, Safari;

→ online process monitoring and logging;

→ access level system for user accounts;

→ print scheduling and queues;

→ statistics for printers, users, time, etc.

BASIC SPECIFICATIONS

CNC system

PLC based	BOSCH Rexroth XM42 controller
CNC Technology	Additive technology with CFC module
Mechanics	Ballscrews based
X axis servo motor	200 Watt motor
Y axis servo motor	400 Watt motor
Z axis servo motor with brakes	200 Watt motor
Extruders axis servo motor (E0-E5)	100 Watt motor
Max travel speed	20 000 mm/min

Printing

Tool changer	Up to 4 print heads
Layer thickness, min.	60µm
FFF Filament diam.	2.85 mm
Compatible plastics	PA, PC, PAEK, PEI
FFF printhead nozzle, diam.	0.4mm ÷ 1.2 mm
Reinforcing fiber, thickness	1k – 0.28mm 3k – 0.49mm
Productivity (in CFC mode)	60 cc/h
X travel	600 mm
Y travel	420 mm
Z travel	300 mm

Temperature

Maximum extruder temperature	FFF: 400°C (liquid cooling) CFC: 400°C (liquid cooling)
Maximum chamber temperature	160°C
Material storage temperature	90°C
Maximum build plate temperature	160°C

Interface

Touchscreen	Multi-touch gesture control, touchscreen
Network communication	Ethernet , WiFi, USB
Operating environment	Room temperature – max 30°C Humidity – max 70%
Power requirements	230 VAC 50/60Hz Current 40A

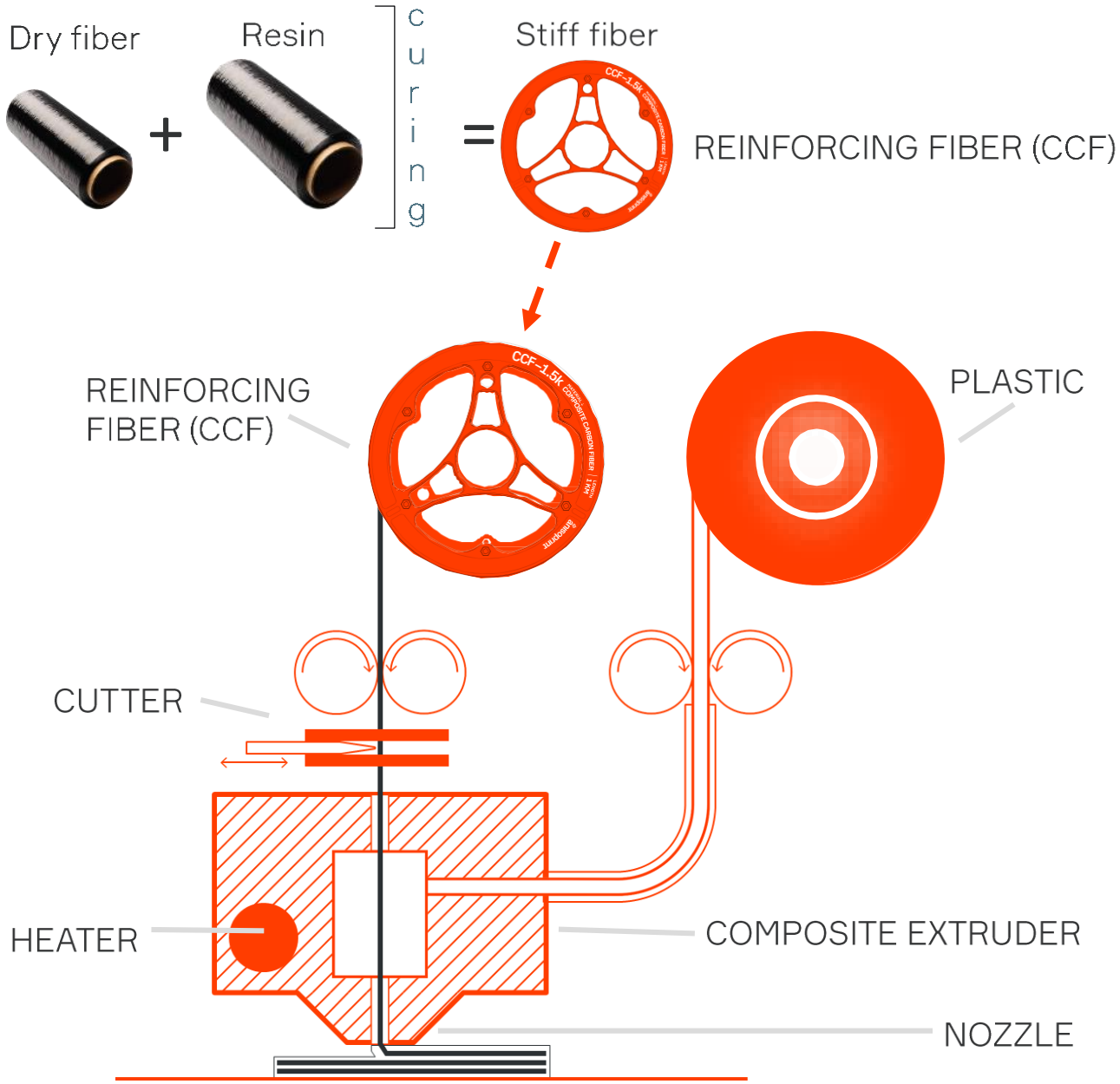
Software

Anisoprint Aura	Slicer for CFC + FFF technology
Aura.Connect	Client-server system for print management
OS support	Windows 7, 8, 10

Physical characteristics

Printer size (LxWxH)	1.9m x 1.2m x 1.9m
With LED Tower light	1.9m x 1.2m x 2.2m

BASED ON COMPOSITE FIBER CO-EXTRUSION TECHNOLOGY



Reinforcing material is made with dry continuous fibers preliminary impregnated and then cured, providing a perfect material quality.

When printing thermoplastic is combined with the reinforcing material. Composite extruder has two inputs: one for the reinforcing fiber and the other for thermoplastic filament. Reinforcing fiber and plastic are fed separately through the same nozzle so you can vary fiber volume ratio and lay it by complex curvilinear trajectories. Thus, it's possible to print composite parts of complex shapes with lattice inner structure: use minimum material for required strength that means minimum weight, production time and price of a part.

As a result, you get a bi-matrix composite part of any shape, without tools or molds, without machining and post-processing. Several times stronger and lighter than plastic, metal or non-optimal 3D printed composites.

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STOP METAL THINKING → START ANISOPRINTING

CONTINUOUS FIBER 3D PRINTING
FROM COMPOSITE MATERIALS EXPERTS