DESKTOP SYSTEM:
ANISOPRINT COMPOSER

TWO SEPARATE NOZZLES / HEATED BED /
ENCLOSED CHAMBER / LIGHTWEIGHT ALUMINUM FRAME /
OPEN MATERIALS SYSTEM / DEDICATED SLICER SOFTWARE /

A4 297x210x147MM
A3 420x297x210MM
A2 594x420x297MM

1. Prints with dual nozzle print head;
2. Heats build plate (up to 120 °C bed temperature, removable glass surface, enclosed chamber).
3. Creates incredibly strong and lightweight parts (X20 stronger than plastic, X7 stronger than plastic compounds, X4 lighter than titanium).

ɣ reinforce material—composite material Anisoprint CCF
ɣ works with any 3D-printable plastic: PLA, ABS, Nylon, PETG, etc

EU Sales: November 2018
MRSP: € 12,000 NET
INDUSTRIAL SYSTEMS:
ANISOPRINT PROM

PROM-PT
6 axial robotic cell
Up to 1100x1100 mm build area
Sales: 2020

PROM-IS
3 axial gantry
Heated chamber
Up to 500x500 mm build area
High temperature plastics: PEI, PS, PEEK
Sales: 2021

PROM-IS
6 axial gantry
Heated chamber
Up to 800x800 mm build area
High temperature plastics: PEI, PS, PEEK
Sales: 2022
COMPOSITE MATERIAL
ANISOPRINT CCF

The resulting material is dual-matrix material, comprising a thermoset impregnated CCF reinforcing fiber and a thermoplastic binder matrix. The thermoset matrix ensures good quality impregnation of a reinforcing fiber tow and good adhesion to different types of thermoplastic materials. Different thermoplastic binder materials can be used to achieve certain physical properties, thermal, chemical, environmental resistance or other properties. The material is formed in a process of co-extrusion of the CCF reinforcing fiber and thermoplastic filament for in-situ consolidation.

**CCF-1.5K CARBON COMPOSITE FIBER PROPERTIES**

<table>
<thead>
<tr>
<th>EFFECTIVE DIAMETER, MM</th>
<th>VF, %</th>
<th>ELASTIC MODULUS, GPA</th>
<th>TENSILE STRENGTH, MPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.35</td>
<td>60</td>
<td>140</td>
<td>1950</td>
</tr>
</tbody>
</table>

**CCF-1.5K DUAL-MATRIX COMPOSITE PROPERTIES**

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>CCF-1.5K + PETG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density, g/cm³</td>
<td>1.24</td>
</tr>
<tr>
<td>Tensile modulus in fiber direction, GPa</td>
<td>60</td>
</tr>
<tr>
<td>Poisson ratio 31</td>
<td>0.20</td>
</tr>
<tr>
<td>Tensile ultimate stress in fiber direction, MPa</td>
<td>740</td>
</tr>
<tr>
<td>Compressive ultimate stress in fiber direction, MPa</td>
<td>290</td>
</tr>
<tr>
<td>Flexural Modulus along axis 1 under bending in plane 1-3, GPa</td>
<td>-</td>
</tr>
<tr>
<td>Flexural Strength along axis 1 under bending in plane 1-3, MPa</td>
<td>520</td>
</tr>
<tr>
<td>Shear Modulus 13, MPa</td>
<td>430</td>
</tr>
</tbody>
</table>
The customized software is used to prepare 3D models for manufacturing of parts on the Anisoprint Composer additive device. To obtain lightweight and strong parts Aura prepares a 3D-model and specialized the reinforcement scheme.

Storage, processing, and print run are fully automated and are carried out using a local computer ensuring confidentiality and safety of data of the user’s models.
# Anisoprint Advantages

## Strength
- X20 stronger than plastic
- X7 lighter than steel
- X2 stronger than aluminum

## Manufacturability
- Special tooling **is not required**
- NO special works required
- Single-stage process

## Economy
- 100 times cheaper
- X10 times energy savings
- X10 times less per volume price

## Optimization
- Topology optimization
- Local reinforcement
- Lattice anisogrid structures

## Universal
- **Reinforcing Fibers:** carbon, glass, aramid, basalt
- **Resins:** PA, PETG, PP, PC, PLA, ABS, PEI, PS, PPSU, PEEK and others

## Automation
- Fully automated process
- Dedicated software
- Good tolerance and repeatability
COMPAARED TO DEKSTOP ANALOGUE

→ Open material system (use different polymers as matrix)
→ Printing soluble supports
→ Printing reinforced lattice structures
→ Wide range of build volumes
→ 30-50% lower material printing costs
→ Non-cloud software
STOP METAL THINKING ➔ START ANISOPRINTING
CLUTCH CONTROL HANDLE HARLEY DAVIDSON
LATTICE FINS FOR MICROSAT LAUNCH VEHICLE

1. Metal lattice fin – $50-80 per machine hour
2. Composite lattice fin with untrimmed fiber reverse zones (Weight saving 60%) $25 per machine hour, 4 hours
3. «Aniva» launch vehicle
THE PART FOR ELECTRIC WHEELCHAIR DRIVE

<table>
<thead>
<tr>
<th>STEEL</th>
<th>ANISOPRINT</th>
</tr>
</thead>
<tbody>
<tr>
<td>WEIGHT</td>
<td>300 grams</td>
</tr>
<tr>
<td>LEAD TIME</td>
<td>48 hours</td>
</tr>
<tr>
<td>NUMBER OF</td>
<td>3 stages</td>
</tr>
<tr>
<td>FABRICATION STAGES</td>
<td></td>
</tr>
<tr>
<td>UNIT PRICE*</td>
<td>&gt; USD 100</td>
</tr>
</tbody>
</table>

*in case of a 1-piece batch
AIRCRAFT INTERIOR BRACKET

**WEIGHT SAVINGS** IN COMPARISON TO ALUMINUM PROTOTYPE IS ABOUT 50%
AVIATION PASSENGER CHAIR LEG

LOAD OF 1.5 TONS
UAV FRAMES

**Tsuru Robotics**

**FPV260 — 260MM**
NYLON + SHORT GLASS FIBER
130 g

**AP F290 — 290 MM**
CARBON-PLA COMPOSITE 3D PRINTING
75 g

**AP F290 LITE — 290 MM**
CARBON-PLA COMPOSITE 3D PRINTING
52 g
Topology optimization
U-OPTI ([http://u-opti.ru/](http://u-opti.ru/))
# Buoyancy Compensation Lever for Para-Athlete Diver

<table>
<thead>
<tr>
<th></th>
<th>ABS</th>
<th>SPOON</th>
<th>ANISOPRINT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Convenience</strong></td>
<td>yes</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td><strong>Number of Dives, Times</strong></td>
<td>&lt;10</td>
<td>14</td>
<td>&gt;100</td>
</tr>
</tbody>
</table>

"The [composite] material makes the component more durable and better developed as it has a printed core. Besides, it is less slippery. Plus it feels like it is more durable and I use it with more confidence. I hope that your lever will serve me much longer. The ABS lever had severe defects as early as after 10 dives. Your lever has not been affected after the same period. In my opinion your part will survive 100 dives."

Dmitry Pavlenko is a para-athlete diver who set a world record in unassisted diving in open water.
UAV FRAME TOPOLOGY OPTIMIZATION

18% WEIGHT EFFICIENCY IN COMPARISON WITH THE ALUMINUM PROTOTYPE

<table>
<thead>
<tr>
<th>FRAME WEIGHT</th>
<th>95 g (118 g)</th>
</tr>
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<tbody>
<tr>
<td>WALL THICKNESSES</td>
<td>1.5 – 3 MM</td>
</tr>
<tr>
<td>HEIGHT</td>
<td>10 MM*</td>
</tr>
</tbody>
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