

An Innovative Method for 3D Printing of Continuous Fiber Reinforced High Performance Thermoplastic Composites

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#### Ultra Performance FEED MECHANISM RAW FILAMENT PPSU PEKK PEEK **High Perf. polymer** PEI PSU PPS Engineering PC. PVDF Grade PC/ABS PC/ASA TRANSITION ZON Nylon **Continuous fibers** Flexible General PETG Purpose HOT ZONE ASA PLA ABS NOZZL HIPS EXTRUDED FILAMENT Semi-Crystalline Amorphous

# Competitive market landscape

|       |                       |                  | S 2 2                        |
|-------|-----------------------|------------------|------------------------------|
| ТР    |                       |                  |                              |
|       |                       | etc.             | ANISOPRINT, RU/LU (2017/21)  |
|       | etc.                  | 3R3DTM, ES       | MARKFORGED, USA (2014/21)    |
|       | 3R3DTM, ES            | DYNAMICAL3D, ES  | APS Techsolutions, AT (2021) |
|       | DYNAMICAL3D, ES       | INTAMSYS, CN     | 9T LABS, CH (2019)           |
|       | INTAMSYS, CN          | INNOVATICA3D, PL | DESKTOP METAL, USA (2019)    |
|       | INNOVATICA3D, PL      | MINIFACTORY, FI  | AREVO LABS, USA (2016)       |
|       | MINIFACTORY, FI       | REP RAP, DE      |                              |
| HP-TP | REP RAP, DE           | APIUM, DE        |                              |
|       | APIUM, DE             | ROBOZE, IT       |                              |
|       | ROBOZE, IT            |                  |                              |
|       | 3NTR, IT              |                  |                              |
|       | 3DEVO, NL             |                  |                              |
|       | ,<br>TRACTUS3D, NL    |                  |                              |
|       | ESSENTIM, USA         |                  |                              |
|       | STRATASYS, USA (1998) |                  |                              |

# Problem

# Innovative solution: from AFP to 3DP



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Patent EPO EP3888879A1 / PCT WO2021198100A1

### Advantages:

- **3DP feedstock lower price**
- **3DP feedstock higher quality**
- **3DP feedstock open-source**
- **3DP feedstock larger variety**
- **High Performance:** mechanical
- **High Performance: thermal**











### **RDI Current Status**

**Technology Readiness Level: TRL 3-**









### Acknowledgement

PoC Prototype

Manufacturing

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-

Simulation

**FEA** 



Curie grant agreement No 712949 (TECNIOspring PLUS) and from the Agency for Business Competitiveness of the Government of Catalonia.

Project implemented at the Analysis and Advanced Materials for Structural Design AMADE research group of University of Girona, Spain.



### Centro Tecnológico AIMEN

Design equations

CAD

#### www.aimen.es

#### 23rd International Conference on Composite Materials ICCM23, Jul 30 - Aug 4, 2023, Belfast, UK