

PROJECT

SPECTRAL

low-coSt Printing of high-pErformanCe Thermoplastics for structurAl appLications

Funding: European (Horizon 2020)

Duration: Jan 2017 - Jul 2019

Status: Complete

Total project cost: €347,114

EU contribution: €347,113



Call for proposal: H2020-CS2-CFP03-2016-01

[CORDIS RCN : 207251](#)

Objectives:

The technology known as Fused Filament Fabrication (FFF) is one of the oldest known methods for 3D printing of objects. In fact, it was the first technology to be widely commercialized, and still has, by far, the largest presence on the market. In addition, printers based on FFF technology commonly have prices far less than comparable designs using photo polymerization or sintering technologies. However, to date, FFF has been largely limited to polymers with fairly low melting points: less than 280°C. This has limited its success from an industrial standpoint, where high-performance polymers such as ULTEM (polyetherimide) and PEEK are needed in order to provide thermal and mechanical performance in extremely demanding scenarios. In the aerospace market, PEEK has become the reference high-performance engineering thermoplastic. PEEK is an attractive material due to its high thermal and mechanical performance, coupled with its low density (about one third that of titanium). It is therefore being widely investigated for replacing titanium and other metals in aerospace applications, in order to reduce overall weight.

Current solutions for additive manufacturing using PEEK require investment is extremely costly systems. PEEK-capable industrial-grade machines need not be astronomical, however. In this context, the main ambition of the project will be to provide the Topic Manager with access to a complete FFF supply chain: industrial-grade PEEK FFF printers at a price point ten times less than current industrial-grade FFF printers, along with a supply of high-quality PEEK filament tested and validated on the printer and in accordance with the Topic Manager's performance specifications. In addition, the PEEK materials will be accompanied by a high-temperature compatible breakaway support matrix material custom-designed for PEEK usage.

Parent Programmes:

[H2020-EU.3.4. - Horizon 2020: Smart, Green and Integrated Transport](#)

Institute type: Public institution

Institute name: European Commission

Funding type: Public (EU)

Lead Organisation:

Rescoll

Address:

ALLEE GEOFFROY SAINT HILAIRE 8
33600 PESSAC
France

Organisation Website:

<http://www.rescoll.fr>

EU Contribution: €167,863

Partner Organisations:

Jdeal-Form Srl

Address:

VIA MONTE GIUDEO 9
28047 OLEGGIO
Italy

EU Contribution: €179,250

Technologies:

Additive manufacturing
Additive Layer Manufacturing

Development phase: Validation

STRIA Roadmaps: Vehicle design and manufacturing

Transport mode: Air transport

Transport sectors: Passenger transport, Freight transport

Transport policies: Other specified

Geo-spatial type: Other