



Valuation of ceramic and metal waste for additive manufacturing



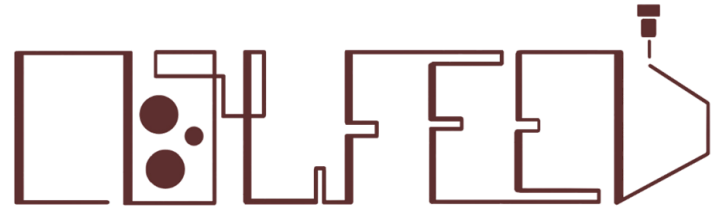
smart

advanced manufacturing

ORGANISATION PROFILE

COLFEED4Print is a Spanish company, dedicated to the development and commercialization of feedstocks for additive manufacturing of high-performance materials. Its patented technology allows the preparation of granules and filaments of composite materials (thermoplastic polymer and inorganic phase) with high homogeneity and easy to print. This technology manages to solve the limitations of the mixing stage in feedstocks for printing materials, in which the physical and chemical characteristics of the powder (chemical stability, size, morphology, density or specific surface) make traditional mixing methods difficult (e.g. eg melt mixing); problems that often result in restrictions in printability, limiting the amount and type of inorganic matter that can be incorporated and uniformly distributed in a thermoplastic polymer matrix or printing vehicle. In this sense, COLFEED4Print can respond to the demand for advanced materials for additive manufacturing.

COLFEED4Print is a spinoff company of the Spanish National Research Council (CSIC), founded by expert researchers in materials. The company currently has two private research contracts and participates in 3 R&D consortia (one national and two international)



COLFEED4PRINT

PROPOSAL INTRODUCTION (I)

Vision: The main objective of this project is the recovery of metal and ceramic waste through the generation of new raw materials for its use in additive manufacturing processes for thermal extrusion (Fused Filament Fabrication, FFF).

To generate this feedstock, a new patented colloidal route will be applied for the process of manufacturing granules/filament composed of a thermoplastic polymeric matrix, with a high content of recycled inorganic particles.

Motivation: This project is focused on satisfying the need to value material waste generated by different manufacturing industries such as the machining industry, metal-mechanical transformation and composite materials to generate new high added value materials to be used as new resources for the industry itself where the waste are generated. In this sense, the project promotes the closure of the life cycle of resources, thus contributing to one of the main European initiatives: the implementation of a circular economy that is being promoted by the European Commission with the Circular Economy Action Plan.

Content: The specific developments necessary to carry out this project can be divided into two groups:

- The use of powder generation technologies for the recycling of waste in the form of chips or powder.
- Obtaining a new colloidal feedstock that incorporates recycled particles, for additive manufacturing of 100% inorganic parts after a sintering post-processing.

PROPOSAL INTRODUCTION (II)

Expected outcome: The manufacture of new colloidal feedstock compositions, containing metal / ceramic particles (100% or mixed with polymers), would open a door to product diversification and the exploration of new markets.

Impacts: Thanks to the development of this project, a wide ecological impact is expected since the recycling of raw materials allows reducing the generation of waste and the emission of CO₂. In addition, it will make it possible to increase the resilience of the European industrial sector by facilitating access to strategic raw materials, limiting dependence on other markets.

On the other hand, the project is also expected to have an impact by broadening the prospects in the additive manufacturing market in the production of powder metallurgical materials and high-performance reinforced composites, and their related sectors (automotive, aeronautics, energy, cutting tools, jewelry, implantology, etc.).

Schedule: Expected Start Date: 01/06/2022
Expected End Date: 30/06/2023
Duration: 12 months

PARTNERS

Current Consortium: list of partners already involved in the project

- COLFEED4Print S.L. Spain

Partner search: Partners of any category (Company, RTO, Association, University) and country are sought

CONTACT INFO

Contact info: COLFEED4Print S.L.

<https://www.colfeed.es/>

Contact Person: Juan A. Escribano (CEO)

e-mail: colfeed@colfeed.es



