



2ND OPEN CALL

MEET THE WINNERS



The AMULET consortium received 31 applications and selected 18 for funding. Those 18 projects comprise SMEs from the building, aerospace&aeronautics, energy and automotive sectors across 16 European Countries.

TIMELINE 2ND OPEN CALL



European SMEs have been numerous to apply, with 37 submitted applications and selected 31 involving 66 entities from 16 countries: 3 countries stand out among others – Italy (15 applicants) as one of the top source countries, then Spain (11 applicants) and Greece (8 applicants).

Other countries: Finland (1), Lithuania (6), Hungary (3), Poland (2), Denmark (2), Belgium (2), United Kingdom (4), Portugal (1), Germany (3), Slovenia (3), Turkey (3), Ireland (1), Croatia (1).

You can see the short film below.



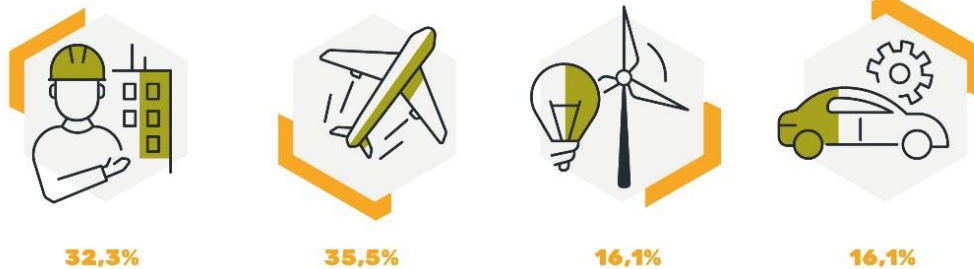
COUNTRIES

Countries reached during the 2nd Open Call.



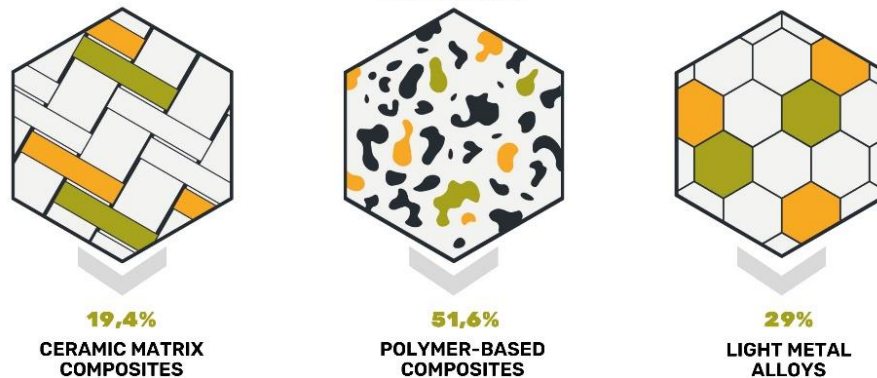
Two sectors dominated among the applicants and preselected applications concern challenges of **aerospace&aeronautics** sector - 11 applications (35,5%) and building - 10 applications (32,3%). Less popular were challenges of **energy** - 5 applications (16,1%) and **automotive** - 5 applications (16,1%) sectors.

APPLICATIONS PER SECTOR



Among materials selected by preselected applicants one stands out among others: **polymer-based composites** material constitutes the largest percentage 51,6% of applications (16 applications). The second is **light metal alloys** - 29% (9 applications). Third material - **ceramic matrix composites** - gathered 6 applications which is 19,4% of all applications.

APPLICATIONS PER MATERIAL





AMULET 2nd Open Call Finalists

Energy

ADAPTANK

Adaptable compressed hydrogen storage tank system for vehicle space optimization

Coordinator: Go Ahead Engineering SL (Spain)

Partner: ADENTE İLERİ MÜHENDİSLİK TEKNOLOJİLERİ AS (Turkey)

Material: Polymer-based composites

Challenge: 18

ADAPTANK aims to develop a hydrogen storage system with an innovative shape that parametrically optimises the storage of hydrogen on-board of aircrafts and other mobility applications, allowing for longer operational range and/or lighter vehicles.

H2sandwich

Synergistic material design of H2 tanks

Coordinator: Composite Designers Ltd (United Kingdom)

Partner: Addcomposites Oy (Finland), M Bruijn Consult bv (Belgium)

Material: Polymer-based composites

Challenge: 18

We redesign conventional high-pressure H₂-gas tanks to reduce tank weight per volume. We achieve this by optimising and redistributing non-linear stress distributions inside tank walls through material re-design and use of novel production methods."

CarbonWeave

Recycled carbon fiber non-woven for a lightweight composite

Coordinator: PANGAIA GRADO ZERO S.R.L (Italy)

Partner: SEASCAN MARINE S.R.L (Italy)

Material: Polymer-based composites

Challenge: 20

Creation of a lightweight composite with high-performance. Recycled carbon fibers will be used to produce a non-woven adapting textile techniques. This material will be suitable for further processing to create a composite for various applications.





AMULET 2nd Open Call Finalists

Energy

TITEC

3D-Printed Ti-Turbopumps at Extreme Conditions

Coordinator: Pangea Aerospace S.L. (Spain)

Partner: Aenium Engineering S.L. (Spain), Diondo GmbH (Germany)

Material: Light Metal Alloys

Challenge: 6

Novel application of the lightweight titanium alloy Ti-5Al-2.5Sn to turbopump components for cryogenic liquid rocket engines through LASER-AM process and materials engineering that allows cross-sectoral use of titanium to hydrogen-based sectors.

AIR-HGEN

Optimization of hydrogen storage tank with control over manufacturing uncertainties

Coordinator: DELTA-MPIS (Greece)

Partner: B&T Composites (Greece)

Material: Polymer-Based Composites

Challenge: 18

AIR-HGEN will deliver an optimal design of the Type 4 composite pressure vessel, targeting on reducing weight, taking into account defects, coming from real case manufacturing scenarios monitored by a digital twin.





AMULET 2nd Open Call Finalists

Automotive

ZinAl

Zinc removal from Al-melt

Coordinator: InsPyro NV (Belgium)

Partner: konzept GmbH - Engineering Services (Germany)

Material: Light Metal Alloys
Challenge: 12

The project will apply existing zinc removal processes in non-ferro industry to aluminum for which the presence of Zn is problematic. The solution will use the metallurgical properties of both zinc and aluminium to refine the aluminium melt.

COSADA

COmposite Solid structural Adhesive for Automotive

Coordinator: TMBK Partners Sp. z o. o. (Poland)

Partners: ADAMANT
AERODIASTIMIKES EFARMOGES EPE (Greece)

Material: Polymer-based composites
Challenge: 12

COSADA is a combination of Adamant Composites' adhesive films and TMBK's thermoplastic nonwovens into ready-to-use solid adhesive for joining composites and metals allowing for consistent, lighter designs, and enhanced new functionalities.

Duolight

Duolight - Aluminum foams with 3D printed technopolymer

Coordinator: NIKA s.r.l. (Italy)

Partner: Consorzio MUSP (Italy)

Material: Polymer-based composites
Challenge: 39

Duolight project combine flexibility and sustainability of 3D additive polymers printing with capability of aluminum foam in terms of lightweight and absorption (insulation, impact, dynamic stiffness) to create new opportunities for EV.





AMULET 2nd Open Call Finalists

Building

3DFit4Connector

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3D Manufacturing of Fit4Purpose Connections

Coordinator: Efficiencyerising, Lda. (Portugal)

Partners: KIESELSTEIN International GmbH (Germany)

Material: Light Metal Alloys
Challenge: 24

The project aims to demonstrate the Product-Service 3DFit4Connectors: designing fit-for-purpose connectors and selection the best 3DP process, based on economic, environmental and technical assessment, with connectors manufacturing and parts supply.

ReMaREFRACT

Reuse of Magnesium-based by-products and slags for refractory materials

Coordinator: ADDITIO D.O.O. (Slovenia)

Partner: EKSTERA d.o.o (Slovenia)

Material: Ceramic Matrix Composites

Challenge: 26

Project ReMaREFRACT aims to reuse Mg by-products and slags from the steel industry by pulverizing them into dust, removing residues, and pressing/binding dust into a new product (or alternatively 3D printing with MgO dust-based filament) and sintering it.

RecuMgased

Recuperation of Mg-based wastes in new materials

Coordinator: Fundación Innovarcilla (Spain)

Partners: KFundación CIAC (Spain)

Material: Ceramic Matrix Composites

Challenge: 26

This project aims to explore the utilization of industrial waste in construction materials. The goal is to reduce waste generation and environmental impact while creating new value-added products.





AMULET 2nd Open Call Finalists

Aerospace & Aeronautics

AF-SAS

Aluminium Foam Structures for Aero&Space

Coordinator: Innobay Hungary Ltd. (Hungary)

Partner: Technoplast Goup Ltd. (Hungary)

Material: Light Metal Alloys

Challenge: 7

Aluminium foam is a game-changer for aerospace, and Innobay Hungary, Technoplast, and Skycruiser Autogyro can provide space-qualified skin-reinforced versions for space cameras. These materials are perfect for aerospace where weight is crucial.

WET-LAYUP- WASTE-REDUX

REDUCING WASTE IN WET LAYUP

Coordinator: AFormX Ilc (Slovenia)

Partner: Izit d.o.o. (Croatia)

Material: Polymer-based composites

Challenge: 1

The project will focus on reducing the material and time waste produced in the wet layup process. Through the improvements in the process the result will be a test panel with measured superior mechanical properties.

ECO

grEen Cabin interiOrs

Coordinator: BEES - BE Engineers for Society (Italy)

Partner: BALTA Srl (Italy)

Material: Polymer-based composites

Challenge: 29

ECO project is aimed to develop and demonstrate in relevant environment the feasibility and financial affordability of novel concepts and methodologies enabling regeneration of composite materials to produce Cabin and Cargo aircraft interior items.





AMULET 2nd Open Call Finalists

Aerospace & Aeronautics

PRACTISE

Production monitoRING and quAlity ConTrol of composite partS based on machinE vision

Coordinator: STAM S.r.l. (Italy)
Partner: Viska Automation Systems Ltd. (Ireland)
Material: Polymer-Base Composites

Challenge:30

PRACTISE's autonomous machine vision system detects defects in composite parts during manual production and at the finished product stage, allowing manufacturers to benefit from reduced costs, improved production efficiency and inspection accuracy.

CUP2

Custom pre-pregs for ceramic matrix composites

Coordinator: PETROCERAMICS Spa (Italy)
Partner: K3rx s.r.l. (Italy)

Material: Ceramic MatrixComposites

Challenge: 9

Phenolic resin systems will be developed and tested with the aim to improve the thermal and mechanical properties of CMCs produced by means of the liquid silicon infiltration (LSI) process.

HTCF

High Temp. CMC Fan Blade

Coordinator: Seyid Fehmi DİLTEMİZ SFD Mühendislik (Turkey)

Partner: KIM TECHNOLOGIES (Turkey)

Material: Ceramic Matrix Composites

Challenge: 8

The objective of this project is to create, manufacture, and showcase a CMC fan blade composed of oxides, and implement an appropriate attachment method to the disc.





AMULET 2nd Open Call Finalists

Aerospace & Aeronautics

ALMAS

Advanced Lightweight Mechanics for Applications in Space

Coordinator: LUPEON, S.L. (Spain)

Partner: UARX Space, S.L. (Spain)

Material: Light Metal Alloys

Challenge:7

Aluminium foam is a game-changer for aerospace, and Innobay Hungary, Technoplast, and Skycruiser Autogyro can provide space-qualified skin-reinforced versions for space cameras. These materials are perfect for aerospace where weight is crucial.



Learn more about these opportunities, visit our official website <https://amulet-h2020.eu/>

Partnership

The AMULET consortium consists of 7 clusters: POLYMERIS (FR) which is the project's coordinator, Bydgoszcz Industrial Cluster Tool Valley (PL), Advanced Materials Cluster of Catalonia (ES), IMAST (IT), West Hungarian Engineering Cluster (HU), Clust-ER MECH (IT), Moravian-Silesian Automobile Cluster (CZ), 4 RTOs: Chemnitz University of Technology, Jožef Stefan Institute (SI), Flanders Make (BE), Norwegian University of Science and Technology (NTNU) and 2 SMEs: FundingBox (PL) and Bax&Company (ES).



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