

PROJECT

FLAMINGo

Fabrication of Lightweight Aluminium Metal matrix composites and validation In Green vehicles

Funding: European (Horizon 2020)

Duration: Feb 2021 - Jan 2025

Status: Ongoing

Total project cost: €5,276,597

EU contribution: €4,445,411



Call for proposal: H2020-LC-GV-2020

[CORDIS RCN : 231870](#)

Objectives:

FLAMINGo will propose a novel industrial manufacturing route for the efficient production of high performance lightweight Aluminium composite materials thanks to a novel metallurgical and forming combined approach for making automotive parts. The intensification of use of the Aluminium composites will be driven mainly by the battery-electric vehicle (BEV) technology that are forcing automakers to look for innovative ways to lightweight the vehicles. The goals of FLAMINGo will be related to the manufacturing of a strengthened Aluminium Metal Matrix Composites Al-MMC with elevated properties (+200% strength and +30% stiffness) compared to current Al alloys used in automotive. FLAMINGo will provide engineering solutions to substitute steel components in BEV automotive parts and achieve a substantial reduction of weight (up to 20%).

To reach these goals the project will target the following development steps at prototype and full scale:

- The production of nanoparticles concentrated masterbatches of Al-MMC, via solid state mechanical alloying, to assure a complete dispersion of the nanoparticles in the Al metal before inoculation in the melt;
- Casting of Al-MMC components by inoculating the masterbatch in an Al melt, and homogenized by ultrasonication and electromagnetic stirring systems;
- Production of smaller components (brackets and connectors) by Low Pressure Die Casting LPDC and bigger components, like subframes, by Green Sand Casting to demonstrate broader feasibility and applicability of Al-MMC;
- Extrusion of cast billets for making profiles for the body frame;
- Identification of the welding techniques for joining Al-MMC components, and assessment of the application via TIG, GTAW and RSW;
- Use of these components for substitution of steels and aluminium parts in electric vehicles, validation of components estimated service life and installation on vehicles;
- Recycling of Al-MMC components supported also by the use of secondary aluminium in the formulation.

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)

Other programmes: LC-GV-06-2020 Advanced light materials and their production processes for automotive applications

Lead Organisation:

Mbn Nanomaterialia S.p.a.

Address:

Via G. Bortolan 42
31030 VASCON DI CARBONERA (TV)
Italy

Organisation Website:

<http://www.mbn.it>

EU Contribution: €621,075

Partner Organisations:**Alke Srl****Address:**

VIA CILE 3-5-7
35127 PADOVA
Italy

Organisation Website:

<http://www.alke.com>

EU Contribution: €356,563

European Federation For Welding Joining And Cutting**Address:**

AV ANTOON VAN OSS 1 4
1120 BRUXELLES
Belgium

Organisation Website:

<http://www.ewf.be>

EU Contribution: €337,500

Constellium Uk Limited**Address:**

GRENVILLE COURT BRITWELL ROAD
BURNHAM
SL1 8DF
United Kingdom

EU Contribution: €328,650

Factor Ideas Integral Services SI**Address:**

CALLE COLON DE LARRETAEGUI 26-1
48009 BILBAO
Spain

EU Contribution: €203,000

Axia Innovation Ug**Address:**

TURKENSTRASSE 29
80799 MUNCHEN
Germany

EU Contribution: €330,750

Kampakas Metallourgiki Techniki Emporiki Kai Viomichaniki Ae**Address:**

ANATOLIKIS THRAKIS 2
16122 KAISARIANI
Greece

Organisation Website:

<http://www.gmc.gr>

EU Contribution: €306,425

Instituto De Soldadura E Qualidade**Address:**

TAGUSPARK AVENIDA PROFESSOR DR CAVACO SILVA 33 TALAIDE
2740 120 PORTO SALVO
Portugal

Organisation Website:

<http://www.isq.pt>

EU Contribution: €662,938

Verein Fuer Praktische Giessereiforschung**Address:**

PARKSTRASSE 21
8700 LEOBEN
Austria

Organisation Website:

<http://www.ogi.at>

EU Contribution: €758,750

Brunel University**Address:**

Kingston Lane
UXBRIDGE
UB83PH
United Kingdom

EU Contribution: €539,761

Technologies:

Electric road vehicles
Lightweight glasses and composites for windows and chassis

Development phase: Demonstration/prototyping/Pilot Production

STRIA Roadmaps: Vehicle design and manufacturing

Transport mode: Road transport

Transport sectors: Passenger transport, Freight transport
Societal/Economic issues, Environmental/Emissions

Transport policies: aspects

Geo-spatial type: Other