Fabrication of Lightweight Aluminium Metal Matrix nano-Composites and Validation in Green Vehicles

FLAMINGo

FLAMINGo is a H2020 project funded under the LC-GV-06-2020 topic, aiming to the development of high-performance lightweight Aluminum composite materials thanks to a novel metallurgical and forming combined approach for making automotive parts.The FLAMINGo Project aims to manufacture strengthened Aluminium Metal Matrix nano-Composites, Al-MMnC, with enhanced properties in terms of strength and stiffness, compared to the existed Al alloys used in Green Vehicles.

- 48 MONTHS
- 8 COUNTRIES
- 11 PARTNERS
- EU CONTRIBUTION 4.445.411 €

WORK PACKAGES

- WP1 COORDINATION AND MANAGEMENT
- WP2 SPECIFICATION, DESIGN AND TOPOLOGY OPTIMISATION
- WP3 PRODUCTION OF Al-MMnCS
- WP4 TOPOLOGY OF OPTIMISATION AND PROCESS SIMULATION
- WP5 CASTING PRODUCTION METHODS
- WP6 EXTRUSION PRODUCTION METHODS
- WP7 VALIDATION AND DEMONSTRATION OF MATERIALS & COMPONENTS
- WP8 CIRCULARITY AND ENVIRONMENTAL SUSTAINABILITY
- WP9 DISSEMINATION, EXPLOITATION AND COMMUNICATION ACTIVITIES

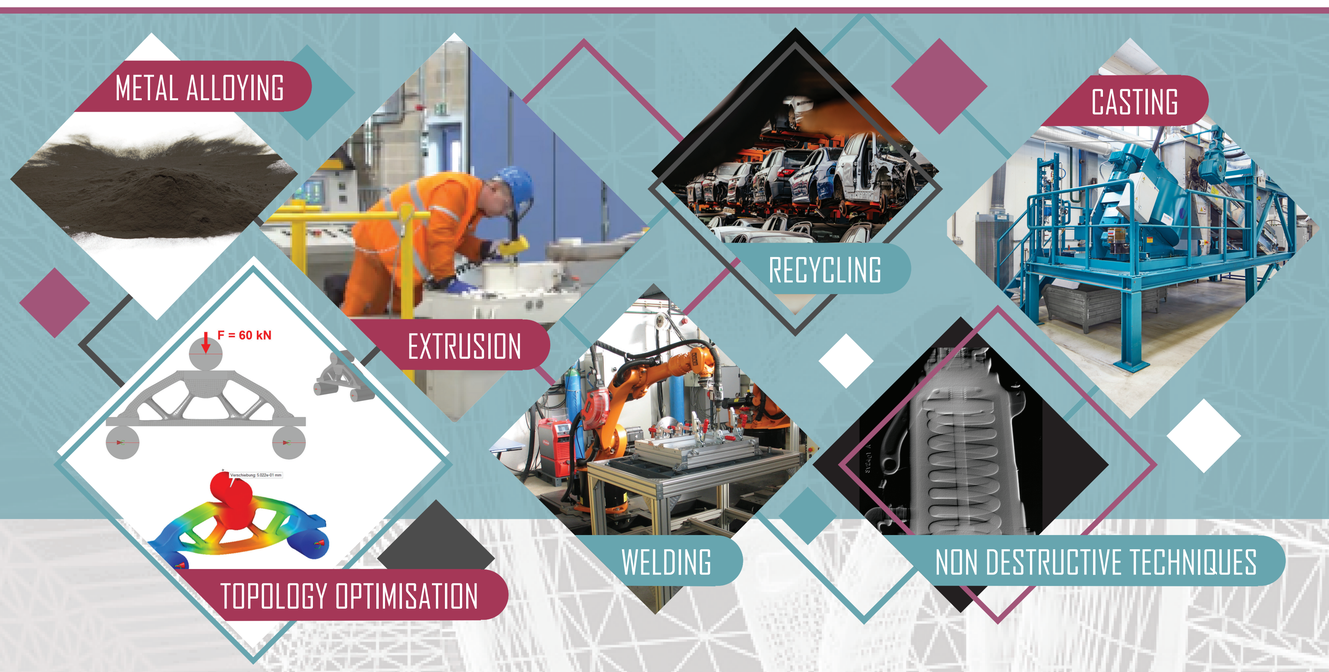
OBJECTIVES

- To produce Al-MMnC materials via solid-state mechanical alloying.
- To re-design automotive components and parts with structural integrity and reduced weight via topology optimisation.
- To optimise the casting methods for the production of Al-MMnC components.
- To optimise the extrusion process of Al-MMnC components.
- To optimise welding techniques and join Al-MMnC automotive parts.
- To prove the recyclability of the Al-MMnC components.
- To manufacture BIW, automotive components, using the Al-MMnCs in casting and extrusion pilot lines.
- To demonstrate in a real scale electric vehicle and to conduct quality control tests.

IMPACT

- Vehicle weight reduction and improvement of existing aluminium properties.
- Short lead time, by deep integration of combined material modeling into the value chain of product development and manufacturing.
- Monitoring and control to ensure structural integrity and safety of the FLAMINGo components and their adoption in Utility Vehicles, Electric Vehicles, Aerospace.
- Compliance with circularity and zero-emission legislation.

FLAMINGO TECHNOLOGIES



THE TEAM

MBN nanomaterialia · Axia Innovation · alkè Electric Vehicles · EWF · Brunel University London · BCAST · Group Kampakas · exelisis · Constellium · ISQ · OGI · globalfactor

PROJECT WEBSITE:

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