

PROJECT PARTNERS



Gaser Ossido Duro
Gruppo **GASER**



POLITECNICO



creative nano



ARISTOTLE
UNIVERSITY OF
THESSALONIKI

idener.ai

IRIS



UNIVERSIDAD DE BURGOS

exelisis

incotec
INNOVACION EFICIENTE

STELLANTIS

Arçelik A.Ş.



6 Small-Medium Enterprises
(GASER, CNANO, IDENER, IRIS,
EXELISIS, INCOTEC)

3 Large Enterprises
(CRF, ARCELIK, IAI)

3 Universities
(POLIMI, AUTH, UBU)



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the European Union

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Project Coordinator

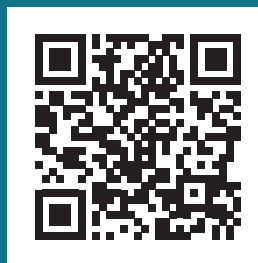
GASER OSSIDO DURO SRL

Via Po 0027, 20089, Rozzano, ITALY

www.gruppogaser.com



www.freeme-project.eu
info@www.freeme-project.eu



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TOXIC FREE METALLIZATION PROCESS FOR PLASTIC SURFACES

PROJECT DETAILS

Start date: JUNE 2022

Duration: 4 YEARS

EU contribution: EUR 4,8 M.

CHALLENGE

Plastics have been used in industrial applications due to their lightweight, flexible, strong and low-cost properties, being particularly favoured in the automotive industry. To enhance their wear and corrosion resistance, as well as the aesthetic appearance, a metallic coating on the plastic surface is often required. However, most plastics are non-conductive material and require special treatment of the plastic surface, including surface etching and activation, metallization via electroless plating, to finally deposit the metallic coating via Plating on Plastics process. The current pre-treatment processes use toxic substances (i.e. Cr^{6+}) and critical raw materials (i.e. Pd).

The FreeMe project aims to eliminate the use of Cr^{6+} and Pd from the Plating on Plastics (PoP) process, by proposing two safe and sustainable by design approaches for the metallization of polymeric surfaces, based on REACH compliant chemicals:

1. Sprayable composite biobased resins
2. Cr^{6+} & Pd free pre-treatment of the plastic surface

OBJECTIVES

- ▶ To implement a safe and sustainable by design (SSbD) strategy
- ▷ To develop a metallization technology of plastic surfaces based on REACH compliant sprayable UV-curable composite biobased resins.
- ▶ To develop Cr^{6+} free etching technologies for plastics pre-treatment.
- ▷ To develop in-silico techniques (simulation and modelling)
- ▶ To develop fast and accurate inspection method for the QC of the process
- ▷ To assess the recyclability of coated polymers
- ▶ To develop a data driven Decision Support Tool
- ▷ To facilitate the acceptance of the new technologies by the market through standardisation activities



Safe -and sustainable
- by - design
metallic coatings and
engineered surfaces

END APPLICATIONS

AUTOMOTIVE



AEROSPACE



**HOME
APPLIANCES**

