

## Partners

- Monolithos Ltd. (Lead Partner), Greece
- Enalos Research and Development, Greece
- Hellenic Society for the Promotion of Research and Development Methodologies (PROMEIA), Greece
- International Center for Advanced Materials and Raw Materials of Castilla y León – ICAMCyL, Spain
- Mineral and Energy Economy Research Institute of the Polish Academy of Sciences (MEERI), Poland
- Technical University of Kosice, Slovakia
- University of Miskolc, Hungary

## Project duration:

1 April 2021 – 31 March 2023

€1.083.925,00

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EIT RAW MATERIALS.

## Website:

<https://pheidias.eu/>

# PHEIDIAS

An innovative  
hydrometallurgical process for  
the recovery of Platinum Group  
Metals (PGMs) from Spent  
Vehicle Catalytic Converters  
(SVCCs).

## Objective

PHEIDIAS will upscale an innovative hydrometallurgical process for the recovery of Platinum Group Metals (PGMs) from Spent Vehicle Catalytic Converters, focusing on the RIS markets of Greece, Poland, Hungary, Bulgaria, Slovakia, Slovenia, Romania, Cyprus, and Serbia. The technology will be commercialized, yielding profits through a) selling of PGMs recovered through a highly efficient process, and b) licensing rights to recycling facilities.

## Expected Results

- 1. Upscaling technological readiness level:** Upscale the PHEIDIAS innovative hydrometallurgical process from TRL5 to TRL8.
- 2. Extended exploitation of PGMs:** Create a secondary source of PGMs value-chains that will contribute to the partial replacement of the primary sources of these metals.
- 3. Environmental and economic benefits:** Increase the recovery rates of Platinum (Pt), Palladium (Pd) and Rhodium (Rh) and reduce liquid waste, as compared to competitive processes.
- 4. Alignment with EIT Raw Materials objectives:** Help towards the alignment of the first and third strategic objectives of EIT Raw Materials, i.e., the securing of raw materials supply and the closing of materials loops.

## Technology

Spent Vehicle Catalytic Converters (SVCCs) are a significant, in terms of both volume and value, secondary source of Platinum Group Metals (PGMs), namely Platinum (Pt), Palladium (Pd) and Rhodium (Rh). A single SVCC contains approximately 2g of precious metals. At European level, it is estimated that the value of precious metals lost annually by SVCCs is higher than €200m (8tn).

The competitive advantage of the innovative hydrometallurgical technology is the increased material recovery rate, as well as significantly lower operational costs. The rates of Platinum, Palladium, and Rhodium recovery with this technology have already reached ~98%, ~98%, and ~60%, respectively, with highly increased operating flexibility and cost efficiency. More specifically, innovation lies in the following: a) the solubilisation of the waste takes place at a pre-treatment stage, b) cheap organic solvents are used by optimising the concentration of oxidants and salts, and c) minimising the concentration of solvents while maximizing the solid to liquid ratio.

