

# REEPRODUCE

Dismantling and recycling Rare Earth Elements from  
End-of-life products for the European Green Transition



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# The REEPRODUCE value chain



## REEPRODUCE

The project demonstrates at **pilot scale** a sustainable and **complete** European **rare earth's (REE) recycling value chain**, from end-of-life (EoL) products to **neodymium-based magnets** for the green strategic sectors. **Competitive cost** and **low environmental impact** of the technologies along the whole value chain are also being demonstrated.

Horizon Europe – RESILIENT VALUE CHAINS –  
Developing climate-neutral and circular raw materials

Duration: 1 May 2022 to 30 April 2026

Total budget: €12.64 Million

EU contribution: €10.05 Million





TRL level

Technology readiness level, TRL7 – System prototype demonstration in operational environment

Pilot/demonstration sites

1. Intelligent sorting pilot, Spain and Norway ✓
2. Automatized dismantling robot, Spain ✓
3. Automatised extraction of Nd-magnets from e-motors, The Netherlands ✓
4. Automatised extraction of Nd-magnets from hard disk drives, Germany ✓
5. Demo-line for separation of Nd-magnetic material from ferrous fractions, Germany ✓
6. Advanced hydrometallurgy pilot for REO extraction, Belgium 🔄
7. High temperature electrolysis pilot for rare earth metals and alloy production, Norway 🔄

Major industrial/research partners

🌍 15 partners from 8 European countries

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# REPROJCE



What are your project targets, results?

-  Full European neodymium-based permanent magnet recycling value chain at pilot scale with production capacity of 20 tonnes of rare earth alloys per year.
-  Producing rare earth metals and alloys in Europe at 25%-reduction in total costs compared to current production from primary resources.
-  Significant reduction in the environmental damage (70 %) and better social sustainable performance compared to current rare earth metals' production (>50 %).
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-  Contribute to the ambitious energy and climate targets for 2030.
-  Resilient, sustainable and secure neodymium-based permanent magnets' value chain for European ecosystems.



## What we are looking for at PDAC?

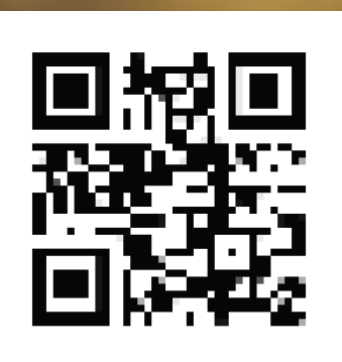
REPRODUCE is an *Innovation Action* project aiming to prove the economic and environmental sustainability of innovative concepts in REE recovery and production from end-of-life products at pilot scale levels.

At the PDAC conference we are looking for networking with industrial stakeholders or potential investors who are interested to discuss the up-scaling of the innovative technologies developed in the project to plan potentially a first pre-commercial (TRL8) or commercial plants (TRL9).

## What we can offer at PDAC?

We will provide the research and industrial communities attending the PDAC conference, concrete insights about how we are planning to recover and produce REE in Europe and the status of development from technological and engineering points of view.

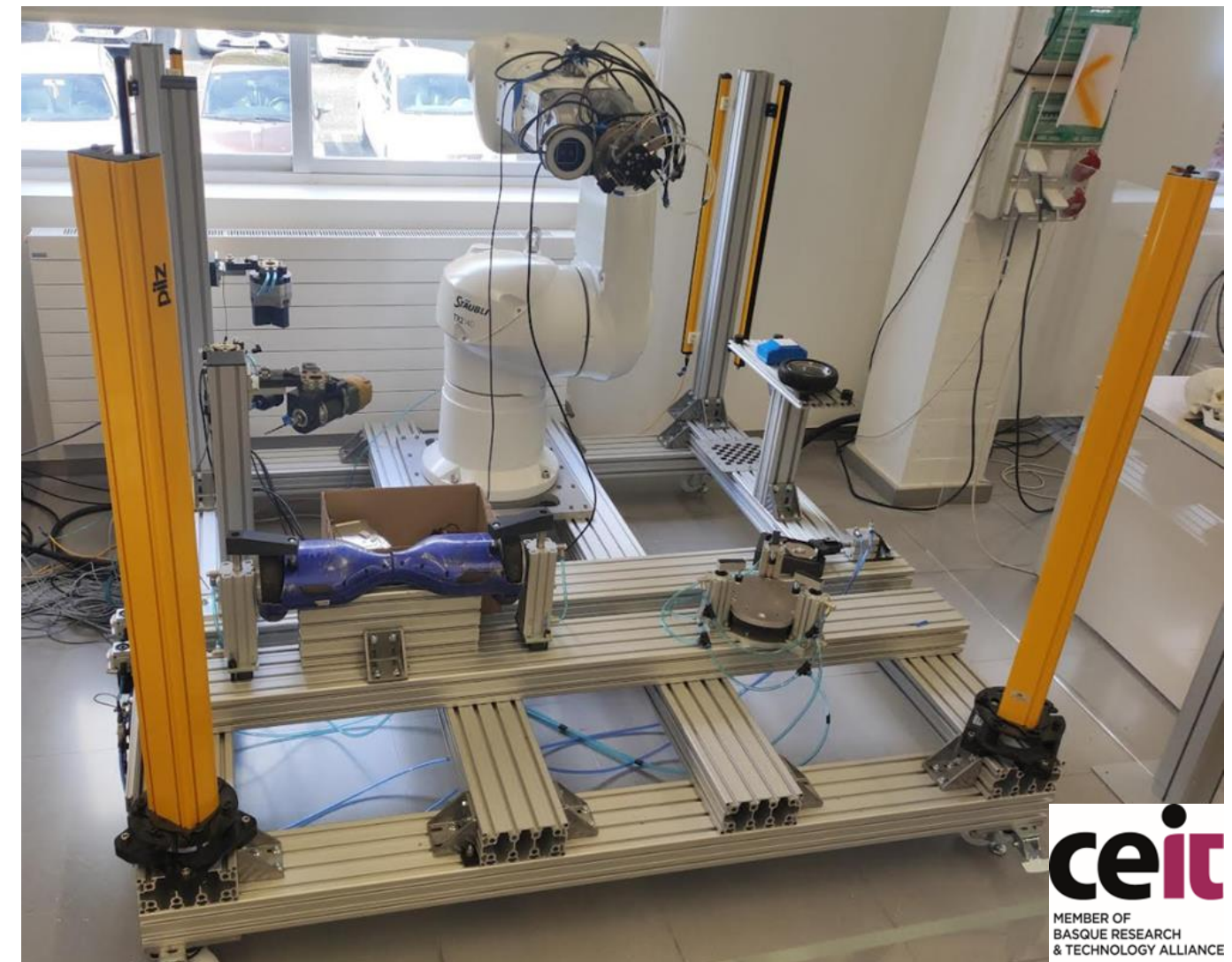
Besides, the presentations will give insights for students and education programs on the main research and technological topics that are considered in this field.



# REEPROJCE



Advanced sorting system, enhanced with AI and an enriched database, which can efficiently sort a wide range of EoL devices containing rare earth magnets.



Robotic solution with integrated computer vision modules to efficiently disassemble EoL products for the extraction of components containing permanent magnets without deteriorating their integrity.



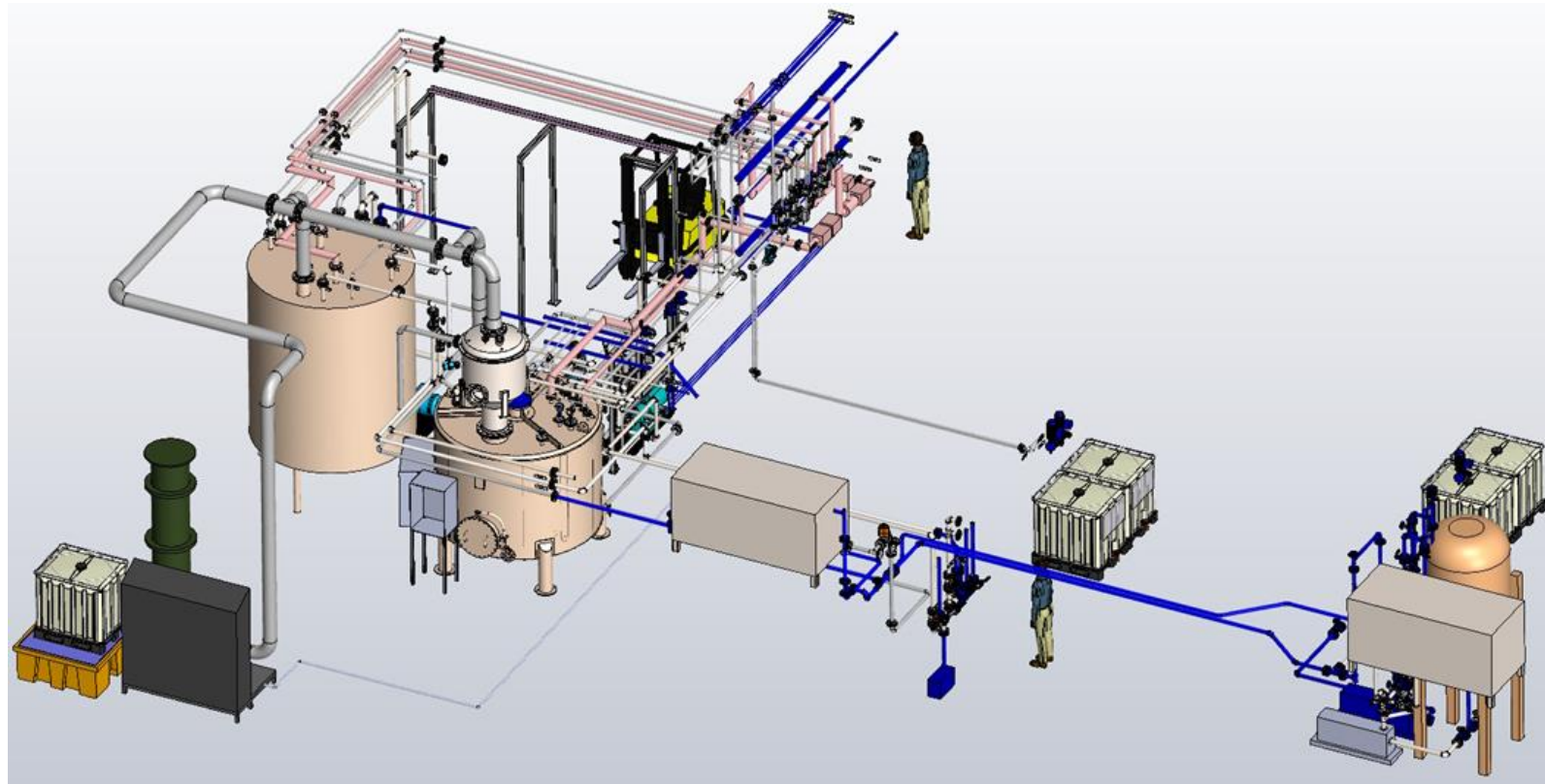
Pilot for efficiently extracting magnets from shredded e-motors, and portable electric mobility devices. Validation trials are underway to enhance throughput, efficiency, and robustness. Target: 7-10 kg magnets output per hour.



Pilot for efficiently extracting magnets from computer hard disk drive components. Validation trials are underway to enhance throughput, efficiency, and robustness. Target: 1-2 kg magnets output per hour.



# REPROJUCE



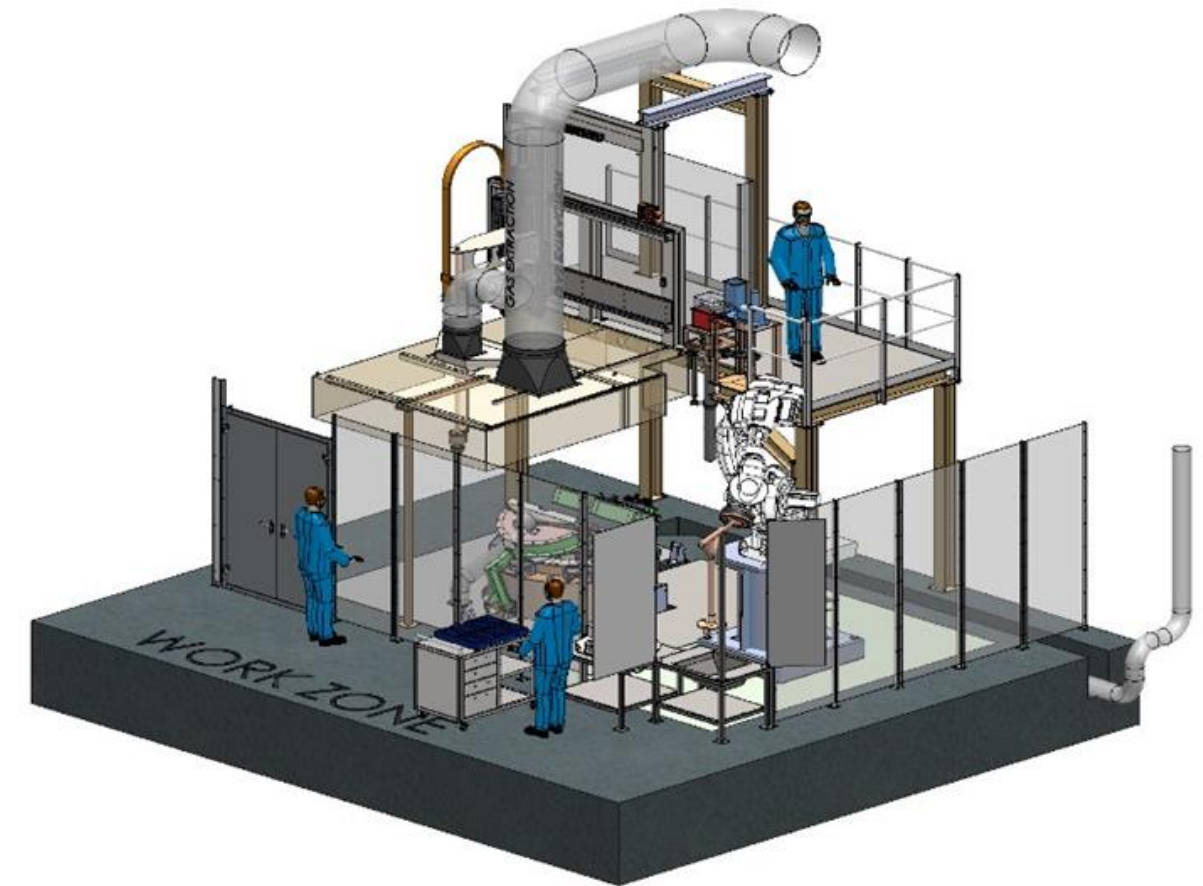
INOVERTIS

tecnal:a  
MEMBER OF BASQUE RESEARCH  
& TECHNOLOGY ALLIANCE

Piping design engineering of the advanced **hydrometallurgical pilot** to extract REO mixtures from discarded magnets of various compositions.

Nominal capacity: 70 tonnes spent magnets per year.

Currently in the commissioning and validation phase.



Elkem

SINTEF

INOVERTIS

3D design of the **high temperature electrolysis pilot** for production of rare earth metals and alloys.

Nominal capacity: 20 tonnes rare earth metal or alloy per year.

Currently under construction.

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# Join the #REEPRODUCE journey!

Home icon [www.reeproduce.eu](http://www.reeproduce.eu)

LinkedIn icon <https://www.linkedin.com/company/horizon-eu-reeproduce-project/>



## ABOUT REEPRODUCE

Achieving Europe's climate-neutral objectives will fundamentally depend on our ability to develop clean energy and mobility solutions in the most sustainable way. But this green transition will generate an exponential growth in demand for raw materials, such as Rare Earth Elements (REEs). – for the production of permanent magnets (PMs).

READ MORE



## RESULTS

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