

CONSORTIUM



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DURATION

1 May 2022 – 30 April 2026



PROJECT BUDGET

Total budget: €12.6 Million

EU funding budget: €10.1 Million

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REEPRODUCE

Dismantling and Recycling
Rare Earth Elements
from End-of-life Products
for the European Green Transition



IN PURSUIT OF A MORE CIRCULAR AND SUSTAINABLE EUROPE

The REEPRODUCE project aims to set up for the first time a sustainable and complete European rare-earth elements (REEs) recycling value chain at industrial scale, able to produce REEs from end-of-life (EOL) products at competitive cost and with environmentally, friendly technologies for the green strategic sectors.



Intelligent Sorting Machine

Sense2Sort has successfully completed its task for the development and realisation of the semi-mobile pilot machine that sorts EOL products containing Nd-based permanent magnets. The technology is based on vision in combination with AI and XRT technologies. Demonstration and validation tests are being carried out at the recyclers' sites, i.e., Indumetal Recycling, REVAC.



Automatic Robotic system for dismantling

CEIT has developed a robot machine that performs unscrewing and housing removal to obtain the targeted components containing Nd magnets from EOL products. Reinforcement learning is applied for the robot to understand and settle the trajectory planning of the action to perform. The pilot is being adapted to the current WEEE dismantling practices of Indumetal Recycling.



Pilots to extract Nd-based magnet blocks from components

FAU-FAPS and Bronneberg have developed several pilot units where the magnet blocks are extracted from different components of selected EOL products, i.e., automotive traction drives, AC/heat pump compressors, traction wheels from personal mobility devices and HDD. The pilots are being validated during Q1 2025.

IMPACT

The project's innovative results will generate technological, economical and societal benefits targeting:

- Setting up a full REEs recycling value chain at industrial scale in Europe for the first time.
- Producing REEs in Europe at 25% reduction in total costs compared to current production.
- Significant reduction in the environmental impact >70%, and better social sustainable performance compared to current production practices (>50%).
- Contribute to the ambitious energy and climate targets for 2030.
- Resilient, sustainable and secure REEs value chain for European ecosystems.



THE REEPRODUCE CONCEPT

