

SUSTAINABLE REE, Co SUPPLY FROM MAGNET RECYCLING: CLOSING THE LOOP

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Dyscovery: A new business for permanent magnets

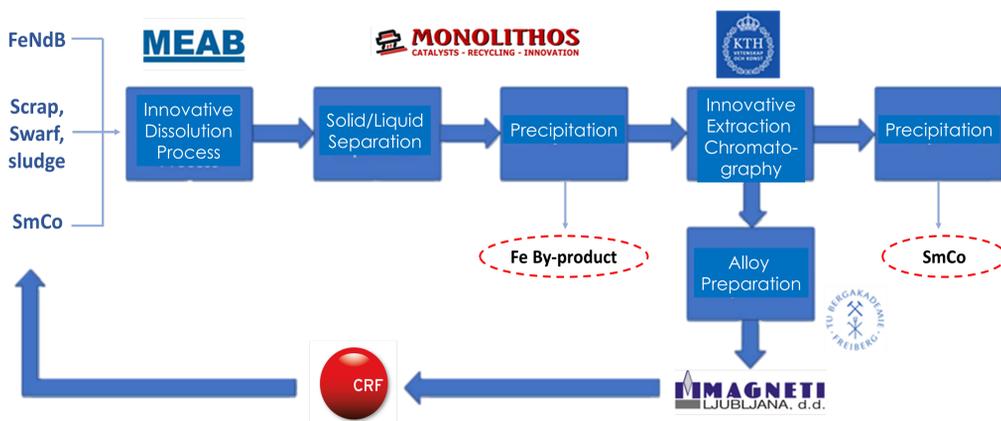
Dyscovery's **business model** is based on the extraction of Nd, Dy, Sm, Co and Fe from End-of-Life (EoL) permanent magnets. These critical metals will feed the EU REE market. In particular, EU permanent magnet manufacturers will be supplied to close the loop to the automotive industries.

The Greek company **MONOLITHOS** CATALYSTS - RECYCLING - INNOVATION which is specialized in waste recycling will build a new plant in 2025. This factory will recycle 630 t/a EoL material, enhancing EU recycling capacity by min 23%, to produce magnet-specification metals (300 t/a).



Innovative processing without H₂ production TRL 5-6 Upscaling to TRL8 in Dyscovery

Flowsheet for Nd, Sm, Dy (REEs), Co extraction

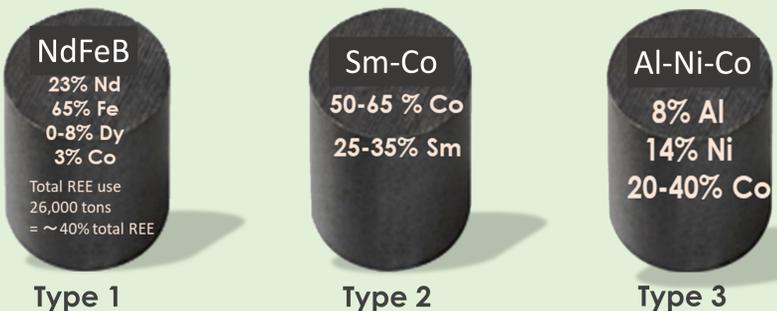


Dyscovery scales up 3 innovative technologies to TRL 8

Hydrogen-free metal leaching patented by MEAB, Germany

Extraction chromatography metal separation by KTH, Sweden

Molten salt electrowinning by TU Freiberg, Germany



End-use applications host:

1-5 g of NdFeB in consumer electronics;

1.4 kg in electric passenger vehicles; 1-2 ton(s) in wind turbines.

Neodymium magnets (NdFeB) are permanent magnets made of neodymium, iron and boron. They have **the highest magnetic properties of all permanent magnets** - stronger than magnets composed of samarium and cobalt (SmCo), aluminium, nickel and cobalt (AlNiCo), and ferrite. They are relatively inexpensive, making them an ideal choice for a wide range of applications.



NdFeB magnets for recycling



NdFeB - sludge Processing residue



SmCo magnets for recycling

Sustainable magnet recycling and production

In 2021, about **2,272,666** new passenger plug-in electric cars were registered in Europe. **Each of those requires magnetism** to work. **When it comes to electric cars, magnets are essential.**



Challenging steps

- Upscaling of the Dyscovery process in 2022-2024 and operational in **2025**.
- Production of "Green" NdFeB & SmCo magnets from recycled materials at MAGNETI (Slovenia).
- Test of the green magnets for potential application in electromobility by CRF (Italy).