CONSORTIUM

SINTEF

REE Minerals

MAGNETI LJUBLJANA, d.d.

TU Delft

CHALMERS UNIVERSITY OF TECHNOLOGY

FBERG

INOVERTIS

PNO BY PNO GROUP

pi Prospex Institute

LCM

DIAMO

€7.06 Million Total budget
€6.40 Million EU Funding budget

48 months

11 partners

9 countries

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SUPREEMO

SUstainable EuroPean Rare Earth Elements production value chain from priMary Ores

Co-funded by the European Union

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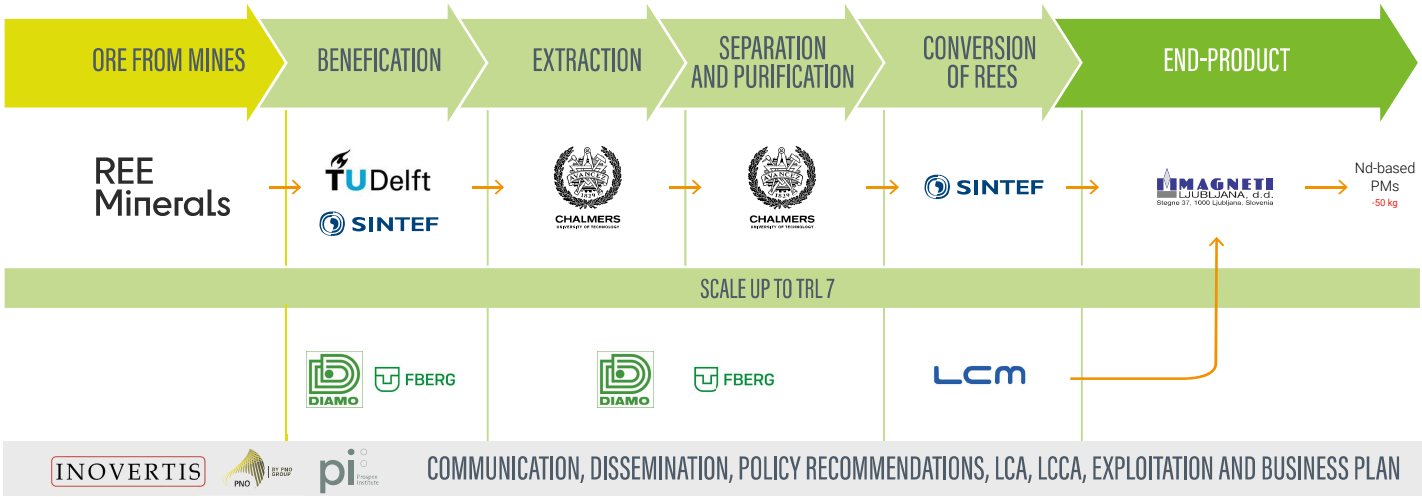
www.supreemo-project.eu

The SUPREEMO project will demonstrate at TRL7 environmentally friendly, safe, flexible, and cost competitive processes for the production of targeted Rare Earth Oxides (REO) for Permanent Magnets (PM) applications. This will be based on integrated efficient processing technologies to create a sustainable and resilient pre-commercial European Rare Earth Elements (REE) value chain.

OBJECTIVES

- Develop and optimise beneficiation technologies to treat various ores of different REE mineralogy, achieving >50-70 % gangue removal, and reducing downstream process costs for energy and reagents.
- Develop and demonstrate advanced froth flotation to reduce >35 % REE concentrate with >90 % recovery.
- Optimise the leaching operation with a sustainable process capable of extracting REEs from complex structures in an environmentally friendly and highly efficient way.
- Develop a low-cost, circular process for selective REE recovery and radioactive element removal using bio-based extractants and green diluents, aiming for near-zero waste and fewer steps.
- Optimise and develop highly efficient electrolysis cell for Rare Earth Alloy (REA) production and manufacturing of NdPr-based permanent magnets.
- Demonstrate the environmental, social, and economic sustainability of the SUPREEMO process value-chain.
- Effectively communicate and disseminate project results to society, scientific, and industry communities, maximising technology market uptake.



EXPECTED IMPACT

Effective beneficiation technologies eliminate significant amount of gangue materials (~80 %), while concentrating the TREO to a level of >35 % concentrates without significant loss of TREO (<10 %).

Flexible leaching process targeting an efficiency of >90 % of REEs recovery concentrates without significant loss of TREO (<10 %).

Sustainable, circular and green solvent extraction process aiming to recovery >95 % of targeted REOs with minimal operation steps to reach the desirable purity (>97 % of REE).

Innovative multi-cathode electrolysis cell to produce REA with 99 % purity.

Minimise residues by identifying specific valorisation routes.

THE SUPREEMO PROJECT WILL BE USING REE SOURCES FROM FEN DEPOSITE (NORWAY)

The largest known light rare earth elements deposit in Europe.