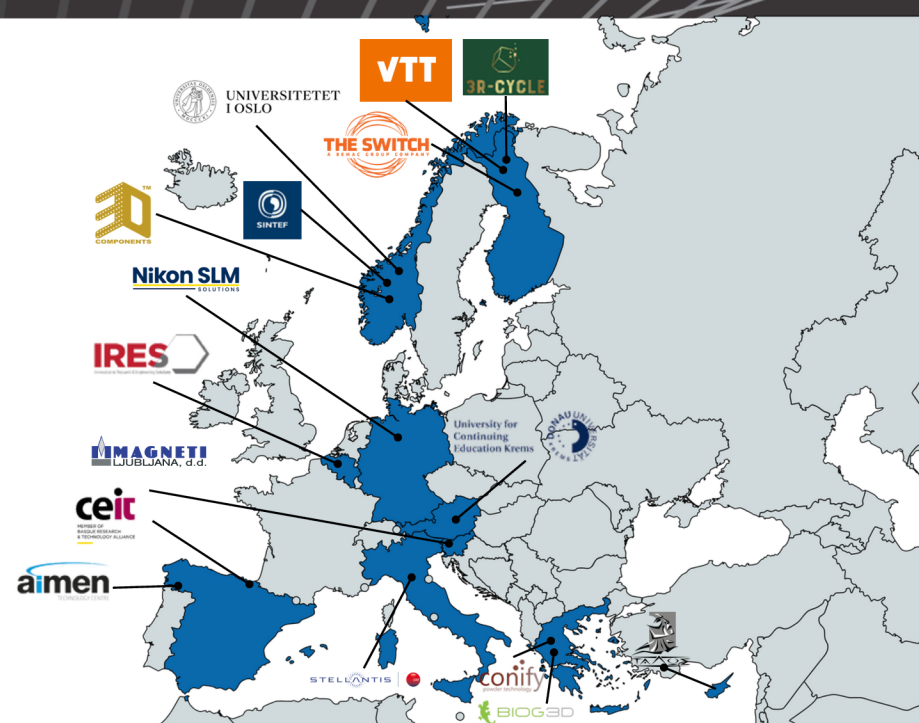


Consortium

MagnEO



“Robust and sustainable Rare Earth Elements-free Permanent Magnets for emergent energy & mobility applications”

More information:

 @MagNEOprojectEU

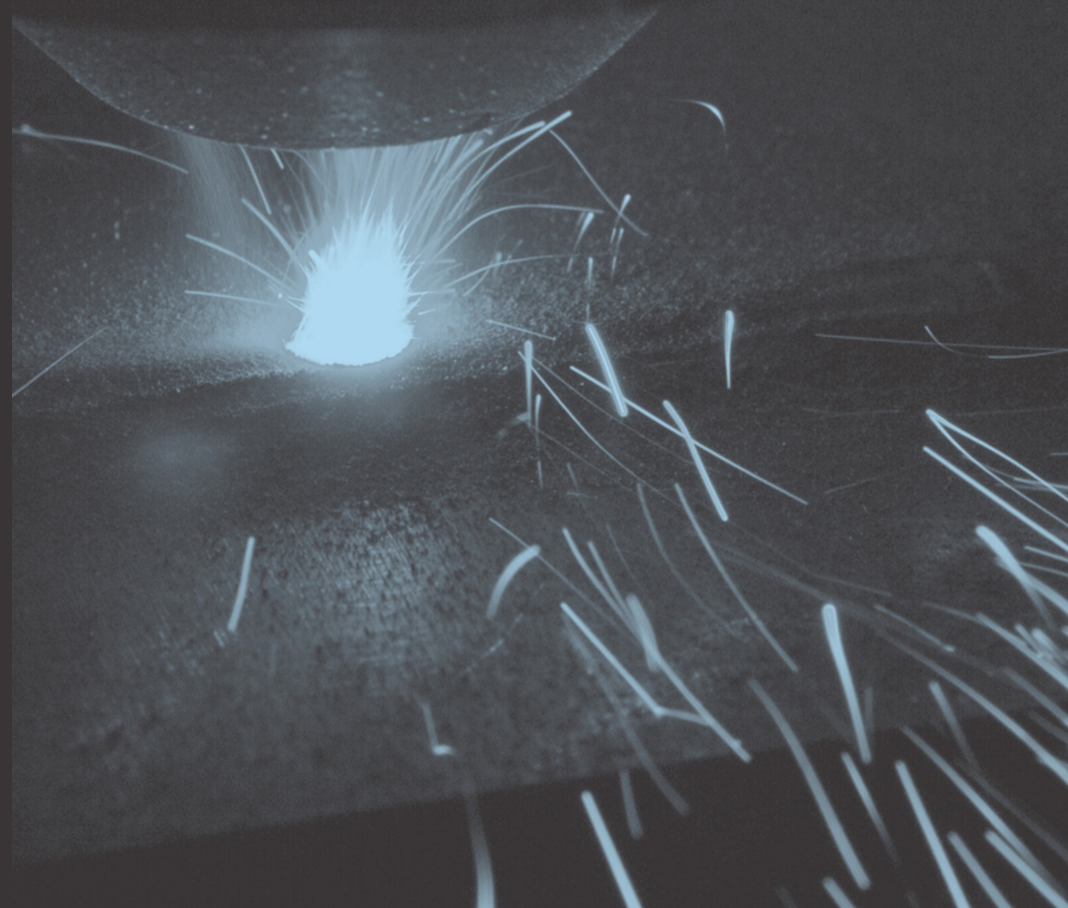
 MagNEO Project



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MagNEO CONCEPT

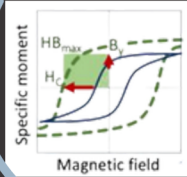
HEA

Composition
design
(DFT, ML*)

High throughput
synthesis

High throughput
characterization

Novel
AlNiCo



Competitive
high-temp
REE-free
hard magnets

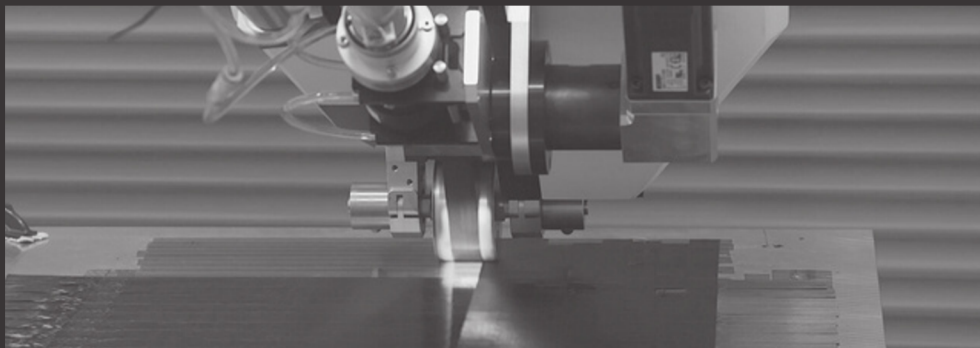
Additive
manufacturing

New recycling
strategies

*DFT: Density Functional Theory, ML: Machine Learning

Project

The MagNEO project will develop new alloy material for permanent magnets, which is Rare Earth Elements-free (REE-free) and also develop recycling strategies to allow an efficient reuse of alloys. In addition, MagNEO project will contribute to transition towards renewable energy sources and sustainable mobility. That is going to be achieved with the performance enhancement of AlNiCo (Aluminium, Nickel, Cobalt) and other similar alloys which can be used as materials of Permanent Magnets (PM) on batteries for relevant energy and transportation applications as most promising due their higher coercivity at elevated temperatures.



Outcomes

A holistic methodology enabling the design of new materials, automated & flexible additive manufacturing Powder Bed Fusion - Laser Beam, and quality assessment of high- performance, REE-free & circular PMs, validated in 5 clean energy and transport related applications (3 in bench tests and 2 via Technoeconomic Analysis & simulation). **MagNEO** encompasses a workflow from design to manufacturing and recycling supported by Life Cycle Assessment / Technoeconomic Analysis / Socio-Technological Analysis, including advanced multi-scale modelling, Machine Learning, enhanced and End of Life strategies (direct & indirect recycling).