

Additive Manufacturing as a strategic response to rare earth supply risks

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The recent article in De Tijd (10 June 2025), "Chinese magnetenban dreigt industrie lam te leggen", sounds the alarm: Europe's strong dependency on rare earth elements, especially for permanent magnets, is putting key industries at risk. With China restricting exports, sectors like electric mobility, wind energy and defence are under growing pressure.

Additive Manufacturing: a local and sustainable alternative to rare earth dependency

At Sirris, we see Additive Manufacturing (AM) as a key enabler in mitigating this dependency. AM offers the ability to locally and on-demand produce permanent magnets, significantly reducing reliance on external supply chains. Beyond supply security, AM also provides important environmental benefits: it minimizes material waste, reduces the use of REEs, and enables the reuse and recycling of magnet components, all aligned with Europe's sustainability goals and the Critical Raw Materials Act (CRMA).

Design freedom and performance optimisation with 3D-printed magnets

Moreover, AM allows for the precise tailoring of material compositions to meet specific magnetic performance requirements, while offering freedom in geometry and shape. This opens up new possibilities for the customisation and optimisation of electrical machines and other magnet-based systems.

Sirris and UGent focus on AM magnets for next-generation electrical systems

Through its advances in AM magnet technologies, Sirris is equipped to help companies explore the benefits of AM and adopt it as a strategic tool for more sustainable and resilient magnet production. This includes efforts on AM-bonded magnets, while also paving the way for developments in AM-pure magnet manufacturing*. To demonstrate this potential, Sirris, in collaboration with Ghent University (UGent), is carrying out numerical and experimental studies on magnets with innovative shapes tailored for next-generation electric machine designs.

**These developments build on work initiated by Sirris through collective projects such as the Eramin project, which focused on recycling NdFeB magnets from end-of-life products, and the upcoming Cornet project, which expands into the production of AM-bonded and AM-pure magnets and application in electrical machines. While supported by research partnerships, these efforts are ultimately aimed at delivering forward-looking solutions and services to industry.*

Authors



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