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SrAMIC Press Release

The Strontium Alternative Magnet Innovation Consortium (SrAMIC) has been funded for a 9-month feasibility study as part of Innovate UK's CLIMATES programme in collaboration with Geolithical Limited and University of Exeter. SrAMIC are investigating the potential for a domestic circular supply-chain for high strength strontium ferrite magnets (also known as ceramic magnets) as an alternative to, and to complement, the rare earth permanent magnets used in electric vehicle motors and wind turbines.

Project Lead Edward Loye says: "This project will investigate whether we can democratise de-carbonisation by making wind-power and electrical mobility more accessible for people, and less impactful on the environment, by sourcing more readily available raw materials for magnets from waste streams closer to home".

Hard ferrite magnets are one of the most widely used magnetic materials, found in a wide range of applications including electric motors, generators, and speakers. Strontium ferrite magnets, which combine strontium carbonate and ferric oxide (aka rust), are the strongest type of ferrite magnet. Strontium ferrite magnets have a proven and easily scalable manufacturing process while offering reliable performance and resistance to corrosion at a relatively low cost compared to other magnet materials. UK universities Cranfield, Sheffield, and Newcastle have already developed and showcased ferrite motor designs. Established manufacturers such as Hitachi Metals/Proterial, TDK, Tesla, and General Motors are already investigating and integrating ferrite magnets into their designs. SrAMIC project supporters Greenspur based in Teesside are already integrating ferrites into their wind turbine generators. As well as their lower cost, strontium ferrite magnets have lesser environmental impacts from processing, such as no associated radioactivity, and are less prone to external market pressures. Strontium ferrite magnets could offer a viable substitute in a range of applications especially where functionality is not mass critical.

"Jason Moody of GreenSpur says: *We're excited to support the SrAMIC project, as developing a domestic supply chain for high-strength strontium ferrite magnets aligns perfectly with our mission to enhance sustainability in renewable energy. Non-rare earth magnets are central to GreenSpur generators, reducing supply chain risk and lowering costs for these critical technologies. We also value the project's emphasis on traceability and circular economy principles, which we believe can significantly reduce the environmental impact of magnet production while making clean energy solutions more accessible and resilient."*

SrAMIC are investigating whether the raw materials for strontium ferrite magnets can be sourced within the UK from readily available scrap steel, strontium deposits, and mine wastes. SrAMIC are developing new innovative methods to bypass traditional carbon intensive processing routes of strontium ores (namely celestite). SrAMIC are undertaking

a life cycle assessment (LCA) to determine whether their approach to strontium ferrite magnet production is more environmentally friendly than current ferrite and rare earth magnet production methods; whilst at the same time developing a unique geochemical 'fingerprinting' technique to trace raw materials back to their source.

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