REEtec and partners receive € 12.5 million support for REE extraction project

REEtec's products are rare earth elements separated to high purity (Photo: Torbjørn Tandberg)

SecREEts – game-changing rare earth elements extraction project

The research and innovation project SecREEts, is a partnership between REEtec and the Norwegian fertilizer giant Yara, and the research institute SINTEF, who heads and coordinates the project. The project has been granted EUR 12.5 million in support under the EU Horizon 2020 program. SecREEts was one of only four projects that won support in the latest round of grant awards where a total of 49 projects were competing. The goal of SecREEts is to ensure a sustainable, stable and safe extraction and processing of rare earth elements in Europe.

SecREEts will establish a competitive and environmentally friendly European value chain for rare earths based on the phosphate-rich stone Yara uses in its fertilizer production. The rare earth elements in the raw material today ends up in Yara's fertilizer, but this is about to change. The plan is for Yara to establish a pilot processes to produce concentrates of the rare earths. Then, REEtec will use its proprietary separation technology to extract rare earths of high purity, from 99% up to 99.999%. The separated elements in oxide form will in turn be delivered to British Less Common Metals (LCM) who will produce metals of them for delivery to German, Vacuumschmelze (VAC), a leading European manufacturer of so-called permanent magnets.

The entire project is managed by SINTEF, a leading Norwegian competence center on metallurgical science in Europe. Europe currently relies on import of rare earth elements, and Yara and REEtec will become the only European producers of these sought-after materials.

– This project is about creating value by utilizing an unused resource. Our production uses about 650,000 tons of phosphate rock annually, containing about 0.3 -1.0 percent of rare earth elements which are not extracted today," says Ms. Kari-Anne Leth-Olsen, Head of P/NPK Technology at Yara Technology Center in Porsgrunn. – We have researched how to exploit this resource since 2011. In collaboration with REEtec we can now establish an integrated production where Yara concentrates the rare earths, and REEtec separates them into high purity. This is an example of circular economy

which contributes to optimal resource utilization to the benefit of the environment, Ms. Leth-Olsen explains.

REEtec has developed a new separation technology for rare earths and has had a pilot plant in operation for a few years. Based on good experience with the pilot, the company has decided to establish an industrial scale demonstration plant on Herøya. The plant will be ready for production in 2018.

– Being able to utilize raw materials from Yara fits well into our plans for an industrial plant at Herøya, CEO Sigve Sporstøl in REEtec says. – It is an environmentally friendly and efficient utilization of an untapped resource, and in addition it is also a very promising business to be part of a competitive and technologically advanced European value chain for rare earth minerals, Sporstøl says.

Critical raw material for Europe
The market for these rare earth elements, which is essential in the production of electronics and many climate-friendly technologies, is completely dominated by China and Chinese players. Access to these commodities is important for European high-tech industry. The EU therefore has a clear ambition to reduce the dependence on China in this area, by establishing a supply chain based on European raw materials and European manufacturers.

Throughout the SecREEts project, SINTEF will support the development of processes and routines at Yara and REEtec. In addition, the research institute will strengthen its own expertise in the extraction of rare earth elements.

– Rare earth elements are critical raw materials of significant importance for the European high tech industry. When we now with great satisfaction received support under Horizon 2020 for this project, it is also a recognition of the leading Norwegian competence in this field, Executive Vice President, Eli Aamot of SINTEF says.

Horizon 2020

Horizon 2020 is the world's largest research and innovation program, with about EUR 80 billion available in the 2014-2020 program period – in addition to the private investment that this money will attract. It promises more breakthroughs, discoveries and world-firsts by taking great ideas from the lab to the market.
The process to apply for these European grants are both demanding and labor-intensive. In this particular application process, there were 49 participants and only four were awarded grants in this application round.

Horizon 2020 is the financial instrument implementing the Innovation Union, a Europe 2020 flagship initiative aimed at securing Europe's global competitiveness.
Seen as a means to drive economic growth and create jobs, Horizon 2020 has the political backing of Europe's leaders and the Members of the European Parliament. They agreed that research is an investment in the future and so put it at the heart of the EU's blueprint for smart, sustainable and inclusive growth and jobs.
By coupling research and innovation, Horizon 2020 is helping to achieve this with its emphasis on excellent science, industrial leadership and tackling societal challenges.

The goal is to ensure Europe produces world-class science, removes barriers to innovation and makes it easier for the public and private sectors to work together in delivering innovation.