

Botanickel

Using plants to extract nickel from soil and then turning that nickel into stainless steel may sound like science fiction, but that's exactly what Botanickel is doing.

Aperam, a leading global producer of stainless steel, together with Econick, a spin-off of France's University of Lorraine that specialises in the phytoextraction sciences, have formed a new joint venture. Called Botanickel, the company seeks to become a world leader in the responsible and sustainable production of biosourced nickel for the stainless steel industry. **To accomplish this goal, the company is leveraging the incredible power of hyperaccumulator plants.**

BOTANICAL POWER IN ACTION

Hyperaccumulator plants are unique in that they can grow in specific metalliferous soils that are often inhospitable for cultivating traditional crops.

These plants have developed the ability to safely accumulate extraordinarily high amounts of heavy metals in their aerial parts, including cobalt, cadmium, manganese, zinc, and of course nickel.

TAKING SUSTAINABLE STAINLESS STEEL TO A WHOLE NEW LEVEL

With nickel being a key raw material in the production of stainless steel, Botanickel will leverage the *Alyssum murale* plant's hyperaccumulator capabilities to extract the metal from the soil. The native plants will be cropped in soils that are naturally rich in nickel and allowed to grow to full maturity.

Once harvested, the plants are dried and their energy is recovered and used by local communities. Nickel is then concentrated and transferred to Recyco, Aperam's European recycling unit initially dedicated to recovering and treating the metallic content from melting shop dusts.

Botanickel's process also generates by-products that can be used as high value fertilizers, exemplifying its commitment to the circular economy.

"We aim to set the global standard in the sustainable production of biosourced nickel, with a value chain spanning from the plants in the ground to the stainless steel used in a plethora of products and solutions. More so, we want to do this with respect for the climate, the environment, and the local communities we operate in."

Tim di Maulo, CEO Aperam

"Botanickel demonstrates that we at Aperam are resolutely committed to significantly reducing our environmental impact. We innovate and push boundaries to source our key raw materials in compliance with our ESG commitments. Making this joint venture a success will benefit Aperam by significantly reducing our greenhouse gas emissions and our exposure to nickel price volatility. Our local project partners will also benefit from cheap renewable energy and fair employment opportunities. Pilot production has already started in several countries, and we look forward to covering a meaningful share of the primary nickel demand that we cannot source from recycling materials."

Bernard Hallemans, CTSO Aperam

"Over the years and by working with leading experts from around the world, Econick has accumulated a high level of expertise in the cultivation and treatment of nickel-hyperaccumulator plants. The benefit of our close collaboration with Aperam is it ensures we will significantly contribute to the switch towards a new, eco-designed mode of producing metals at large scale and in the long-term."

Claire Hazotte, PhD in Chemistry, Manager – Econick

OUR APPROACH

Biosourced Nickel Done Right

Botanickel's activity is designed to meet the needs and challenges of a world well-aware of the limits of planetary resources, around a value chain that is innovative, is environmentally friendly and creates shared values over the long term.

OUR LOGO

Our logo illustrates how Botanickel is both circular and integrative. Not only do our plants grow up from the ground, **they also extract nickel out of the ground.** Both plant and nickel are the basis of Botanickel's cycle, respectively serving as biomass for the production of renewable energy and as a raw material for the production of stainless steel, **which itself is 100% recyclable!**



plant

circular

stainless steel



Botanickel's innovative, circular and biosourced nickel production process is the outcome of decades of **research happening at the University of Lorraine, which is globally renowned for its role in developing the field of phytoextraction.**

OUR COMMITMENTS

Respecting the environment, reducing carbon emissions, supporting the circular economy, and empowering local communities – Botanickel takes sustainable stainless to a whole new level.

REFERENCE

A pioneer in using plants to extract nickel, Botanickel aims to become a reference in the production of biosourced nickel and, in doing so, bring an unprecedented level of circularity and sustainability to the production of stainless steel.

CO-DEVELOPMENT

Involving local communities across the entire value chain is at the heart of Botanickel's strategy. We will develop opportunities in research, education, training, employment and energy production that are aligned with local priorities.

BIODIVERSITY

Native hyperaccumulator plants, cultivated in accordance with the principles of agroecology, will improve soils that are naturally inhospitable to common crops while also preserving the local environment and protecting biodiversity.

CLIMATE

Driven by an urgent need to reduce global greenhouse gas (GHG) emissions, Botanickel will have the potential to massively reduce the CO₂ emissions associated with the production of ferronickel and thus Aperam's stainless steels (Scope 3).



ABOUT Aperam

Aperam is a world-leading stainless steel company with sustainability at its heart.

Since its launch in 2011, Aperam has become an undisputable global player in stainless, electrical, and specialty steel. With a flat stainless and electrical steel production capacity of 2.5 million tonnes in Brazil and Europe, Aperam has customers in over 40 countries. This success is the result of a community of 10,700 employees who are working hard to make Aperam consistently better.

Together, the company and its people are embracing sustainable development, a factor that is at the very heart of Aperam's strategy of providing steel and alloy solutions that are affordable, and long-lasting, and that offers the strength, versatility, and endless recyclability needed to build a sustainable society.

With its new Recycling and Renewables segment (BioEnergia, ELG, Recyco), Aperam has put itself at the forefront of the circular economy. In Europe, its production processes use about 90% scrap metal. Aperam is also unique as it is producing charcoal from its own FSC®-certified forestry in Brazil, which is then used in the steel-making process as a natural and renewable substitute for fossil fuels. Today, around 30% of Aperam's workforce create value from working in Recycling and Renewables upstream. Aperam is also committed to making its products both sustainably and safely.

Thanks to efforts like these, which go above and beyond what is required, Aperam's CO₂ footprint ranks as sector leading, and its overall sustainability performance consistently receives top ratings from external analysts.

For further information, please visit the website at:

www.aperam.com

ABOUT ECONICK

Econick is a young spin-off company from the University of Lorraine (Nancy, France) which develops the technology of producing biosourced metals from hyperaccumulator plant crops.

Econick has gathered the leading scientists globally from botanical research to adapted hydrometallurgy in order to eco-design this new technology after 30 years of cutting-edge R&D in Nancy and elsewhere in the world. Today, Econick is designing production chains for several metals, including nickel, zinc and REE.

It also operates several soil remediation operations using hyperaccumulator plants in Europe. Production of biosourced nickel has started for some commercialized artifacts sold by Econick's customers.

For further information, please visit the website at:

www.econick.fr



FOR MORE INFO



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