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Press release from AFRY

AFRY engineering partner in biorefinery project turning harmful seaweed into valuable products

Origin by Ocean and AFRY have entered a collaborative engineering collaboration to plan an industrial-scale biorefinery for processing bio-based seaweed products in Finland. The conceptual study phases aim to define production concepts and the steps required to construct a biorefinery. Origin by Ocean's first algae biorefinery in Finland is projected to reach full production capacity by 2027.

Origin by Ocean, a Finnish biotechnology start-up, is developing a process technology to refine seaweed or algae into bio-based ingredients for a wide range of industrial applications. The unique process solves two critical issues: production of sustainable ingredients for various industries, and the mitigation of harmful algae in coastal areas, thus preventing marine eutrophication. The process transforms algae into chemical ingredients that can replace crude oil as a raw material in many applications, significantly reducing the carbon footprint of the final products. The refined substances can be used, as thickeners and binders in cosmetics and food products, among other uses.

"I am pleased that we can leverage AFRY's solid expertise in this vital future project. AFRY has extensive design and technology experience in biorefining projects across various industries. When the first refinery is running at full capacity, it will remove a significant amount of nitrogen and phosphorus from the marine region, which will decrease eutrophication where the algae was harvested. The permanent removal of these nutrients will have a significant impact on eutrophication and will open up the possibility of up-cycling of the nutrients recovered", shares Mari Granström, CEO of Origin by Ocean.

"We are proud to empower Origin by Ocean in this sustainable transition project, which aligns seamlessly with mission to contributing to the transition to a sustainable society. Our process technology specialists, coupled with our multidisciplinary engineering team will ensure that the biorefinery set global standards for operational sustainability," says Tuukka Sormunen, Head of Process Industries Finland, AFRY.

The feedstock for this biorefinery includes both invasive species, such as blue-green algae and sargassum, which are detrimental to marine ecosystems, and sustainably farmed seaweed. These resources are sourced from various locations, including the Baltic Sea, the coasts of Portugal and Spain, the Caribbean, as well as suppliers in Norway and other potential regions.

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Interested in learning more? Seaweed and algae can cause problems when their growth becomes excessive, leading to algal blooms, ecosystem shocks, harm to marine life, economic consequences, and nutrient pollution. Their overgrowth can deplete oxygen levels, smother habitats, outcompete native species, and disrupt fishing and tourism activities. While seaweed and algae are important components of marine ecosystems and have various beneficial uses, their uncontrolled proliferation can disrupt the balance of ecosystems and cause ecological and economic challenges. Seaweed containing nutrients can be removed from the sea, and processed into valuable, and environmentally friendly ingredients. Read more about how AFRY can help industries in transition to a more sustainable future:

<https://afry.com/en/offerings/process-industries>

About Origin by Ocean

Founded in 2019, Origin by Ocean is pioneering a biorefinery process that uses seaweed as a raw material for the chemical industry, catering to sectors such as cosmetics, detergents, textiles and packaging. Future biorefineries will have the capability to process both blue-green and brown algae. Origin by Ocean is currently piloting the scaling of its industrial process in Oulu at the premises of biorefining company Chempolis. The company's long-term plan is to set up a network of biorefineries near raw material sources worldwide.

About AFRY

AFRY provides engineering, design, digital and advisory services to accelerate the transition towards a sustainable society. We are 19,000 devoted experts in industry, energy, and infrastructure sectors, creating impact for generations to come. AFRY has Nordic roots with a global reach, net sales of 24 BSEK and is listed on Nasdaq Stockholm.

Making Future