

Microalgae in IT

Microalgae based, safety-tested and optimized fish feed value chain by using Interdisciplinary R&D and IT solutions

About the Project

The Microalgae In IT project aims to develop and demonstrate an innovative and cost effective circular blue bioeconomy model where carbon dioxide from flue gas and nutrients from agri-food residues are used for enhancing microalgae growth in the controlled cultivation environment in photobioreactors. The system will be designed to be applicable also in the Nordic climatic conditions, as together with flue gas it makes use of the utility's excess heat.

Microalgae are known for their high nutritional properties and yield per hectare. This can be further increased when the growth medium is enriched with CO₂, but the few pilot projects on this struggle with achieving the required biomass quality, i.e. purity for use as fish feed, and further to more valuable applications. Before the gas enters the bioreactor, we apply alternative pre-filtering technologies, and compare the outcomes with biomass grown on unfiltered flue gas. As we expect to have some potentially toxic substances in the raw biomass, at least when the filters are not used, we thereafter apply several alternative after-treatment approaches in order to detect which of them are applicable for further purifying the microalgae biomass. We follow the properties of the microalgae throughout the value chain, incl. conduct live trials on rainbow trout. The trials indicate the microalgae-based feed supplement's effect on fish microbiome, growth, and end product quality.

For reliable tracking of potential hazardous substances throughout the value chain, we develop sensors and data analyzing methods, as well as algorithms that give automatic warnings, hence IT is an integral part of the methodological approach. Throughout the project we consider economic, environmental and societal aspects that may support or hinder the adoption of this novel approach. The project is conducted by the Estonian University of Life Sciences and Power Algae Llc (Estonia), Matís (Iceland), and University of the Azores (Portugal).



Project Overview

1st Additional Call | 2021

Project Partners:

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Keywords:

fish feed,
microalgae,
valorization of waste streams,
toxicity tests,
safety and transparency.

Priority Area:

Advancing the supply systems
in the blue bioeconomy
value chains



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