



Reducing environmental impacts in aquaculture production through scientific innovations (Denmark)

INNO-TEK (Innovative end-of-pipe treatment technologies for nitrogen, phosphorus and organic matter from RAS)



The project Inno-Tek is financed under the subsidy scheme Joint efforts in aquaculture 2021 as part of the Danish marine and fisheries development program 2014-20 (article 47), which aims to help meet the EU2020 goals of intelligent, sustainable, and inclusive growth.

The aim of the project is to research and develop new technologies and processes to reduce the emission of nitrogen (N), phosphorus (P) and organic matter (O) produced in land-based fish farms, which will allow for increased fish production without further environmental impacts, through the development of two innovative and practical final cleaning solutions:

- Flocculating bacteria, which are used to reduce Nitrogen emissions, and
- Cost-effective utilisation of biodegradable flocculants and lignocellulose components to produce a much dryer waste product, which is easier to transport and can be used in other processes (fertiliser, energy production, etc.)

Project partners are: DTU Aqua, Alumichem A/S, Alpha Aqua A/S, Dansk Akvakultur, Danforel and AquaCircle

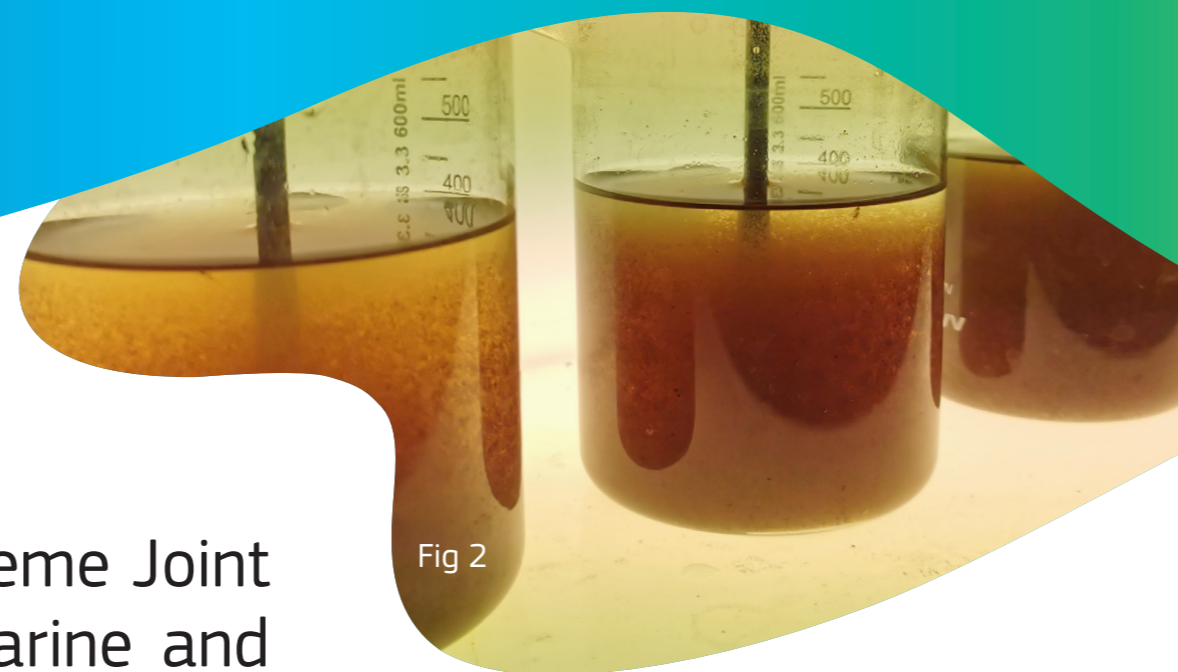


Fig 2



Fig 1

MAIN OUTCOMES OF THE PROJECT

- Decoupling economic growth from environmental impact in land-based aquaculture
- Development of Nitrogen removal technology, shortening the process from 17 hours to 4 hours
- 19x reduction in Nitrogen footprint
- Optimal design and operational conditions transferable to other businesses
- Increases dry matter waste from 5% to 50%, improving transportability and reuse of bio-waste

Total project budget: **5 513 759 DKK**

SMEs: Alpha Aqua A/S, Alumichem A/S, Danforel (50% financed) with a total of 1 211 258 DKK

Branch organisation: Dansk Akvakultur and AquaCircle (75% financed) with a total of 392 770 DKK

Public research institution: DTU Aqua (100% financed) 3 909 732 DKK

Public finance: 75% financed by EU through via European and Maritime Administration Fisheries Fund (EMFF) and partially national public funds (25%).

Fig. 1: Reactors used for development of flocculant Nitrogen removal bacteria.

Fig. 2: Evaluation of organic flocculants for Phosphorous and Organic matter removal from fish waste with higher dry matter content for transport and valorization (biogas, fertilizer, and biochar production)

Fig 2

