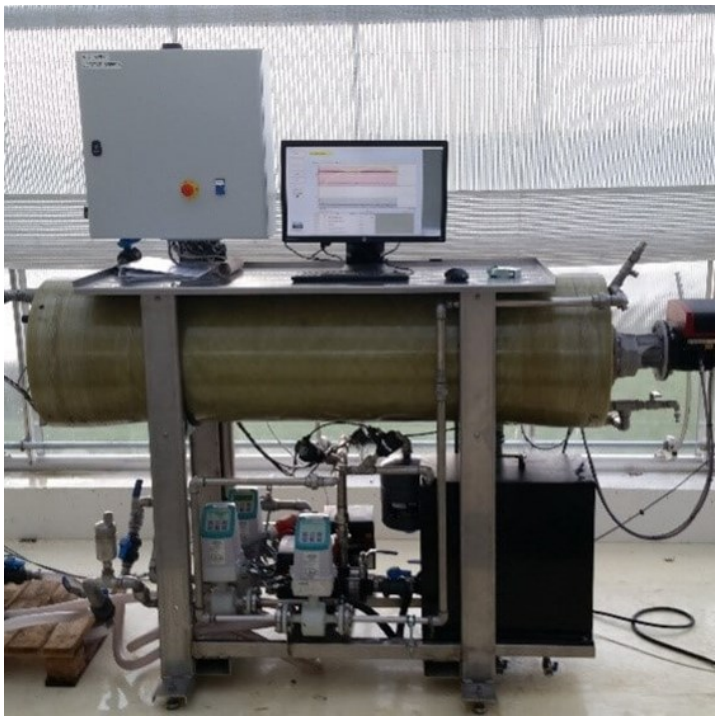
LIQTECH

FIMAFY

Filtering technologies for microalgae and sustainable high-quality feed for fry



FIMAFY

**Development of filtering technologies for microalgae and sustainable high-
for fry.**

There is an urgent need for alternative resources to fishmeal and fish oil to produce fi
the aquaculture industry. The resource problem is due to the rapid growth of aquacu
fact that catches of fish for the feed industry are stagnating. The idea to use microa
feed originated from an ongoing EU project, which demonstrates that algae can be
processed water from the industry.

FIMAFY has employed strategies to provide a clear concept for microalgae up-and
processing, investigated the shelf-life stability of the dried biomass, and finally evalu
biomass as a fish feed ingredient. Pre-Gasified industrial process water with a high c
of ammonia and free from toxic compounds, representing effluent from a local biogc
used as a low-price growth medium. In this study, an innovative downstream proces
developed. The process setup includes crossflow microfiltration (MF) by silicon carbid
ceramic membranes, up -concentration by bowl centrifuge, and finally delicate dryir
biomass by a novel swirl(spin) flash dryer. Harvest trials have been performed on eigh
microalgae species
(*Monodopsis subterranean, Nannochloropsis salina, Dunaliella salina, Phaeodactylu
Chlorella Vulgaris, Chlorella sorokiniana, Chlorella pyrenoidosa*, and *Desmodesmus* sp

All the species showed the same flux pattern while the performance of the harvest w
species-depended. The recovery efficiencies were higher or equal to 98%, while no c
was observed. The filtration VCR (volume concentration ratio) for microalgae harvest
between 10-30, depending on the species cell size, shape, and other parameters. Th
have also been successfully tested on a large scale for *Nannochloropsis salina*. Energ
consumption in this processing technology is estimated at 28% lower than known cur
processing technologies applied to microalgae. These findings represent the SIC-UF
membrane filtration as a robust and feasible technique for the downstream processi
microalgae.

Participants

- BioMar A/S, Denmark
- LiqTech International A/S
- IFAU, Denmark
- Ecolipids A/S
- DTU Food
- DTU Aqua

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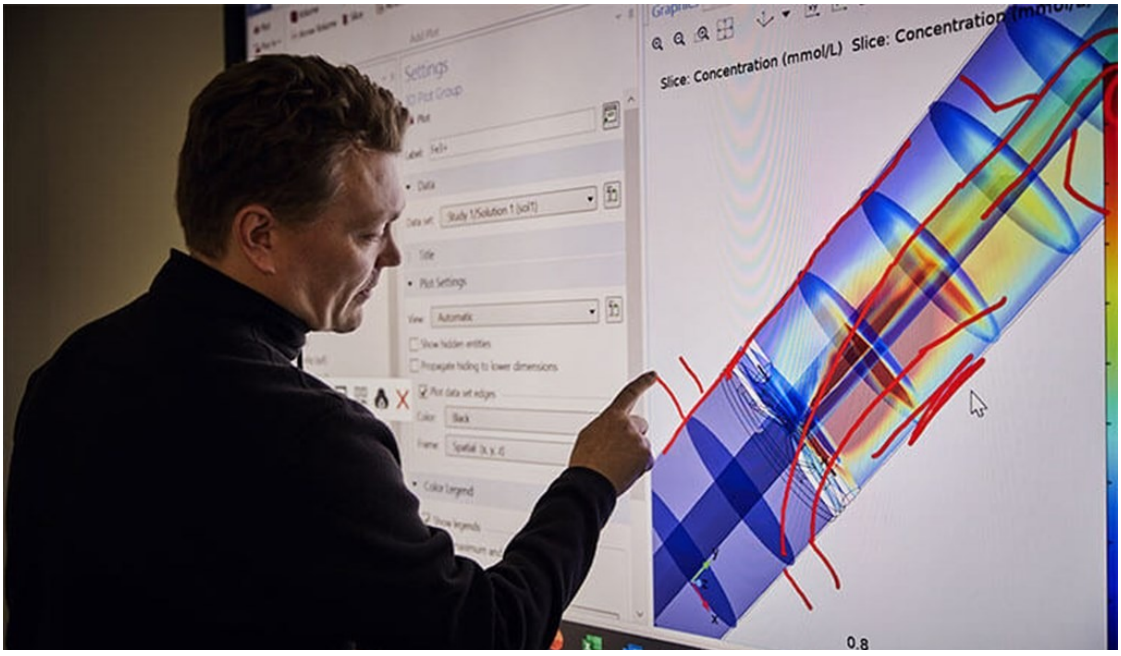

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Maybe you would like to learn more about removal of pollutants present in very small amount in aqueous systems? Or cutting edge technologies to separate water and organic material from pelagic industries effluents?