

# WeBoat: neutralization of residual of sealice agents

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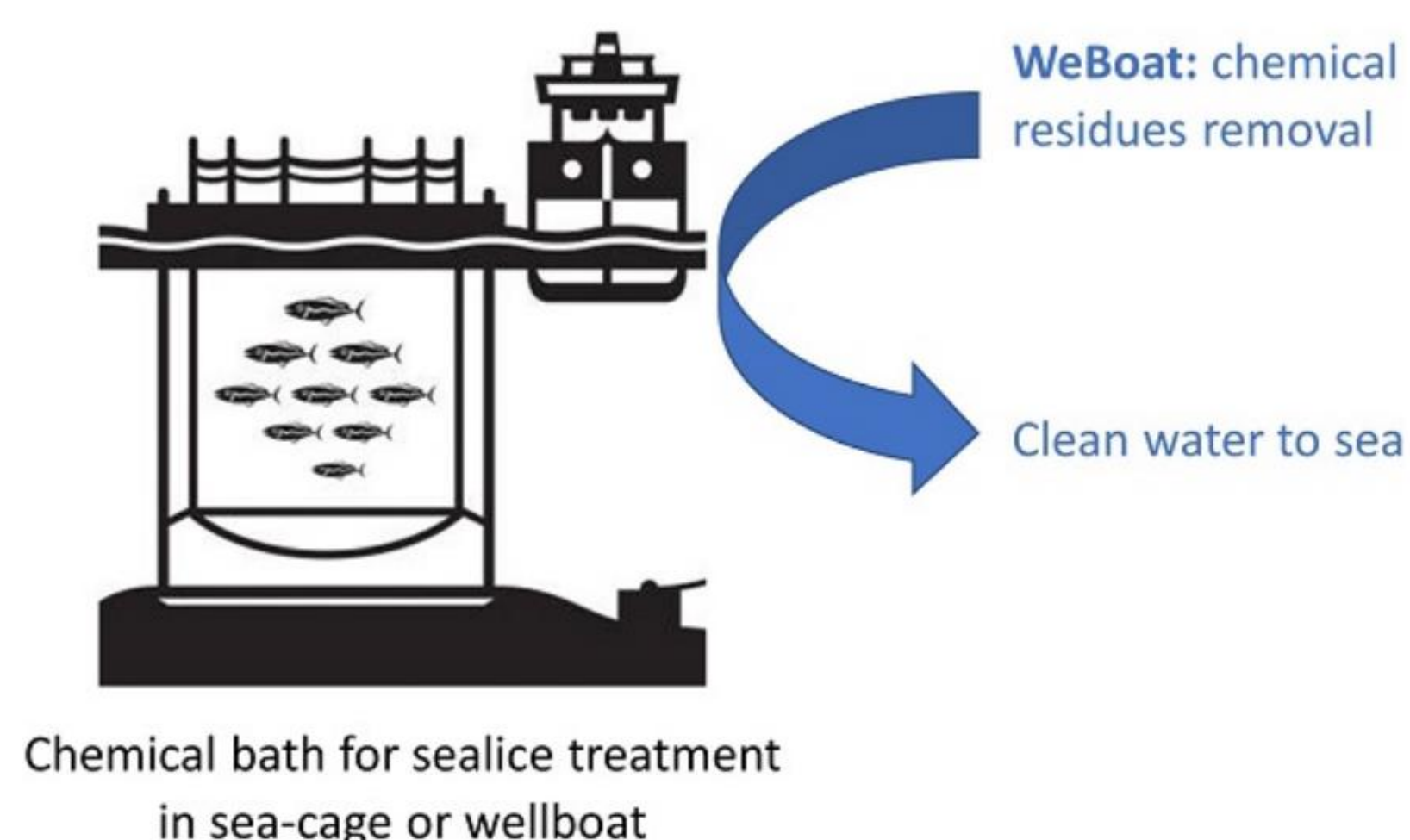
## INTRODUCTION

The salmon parasite *Lepeophtheirus salmonis* or also called Salmon Louse is still a major problem in aquaculture along Norwegian and European coastlines. After treatment, the treated wastewater is usually released back to sea, along with the remaining medicines that are potentially harmful to the local aquatic environment.



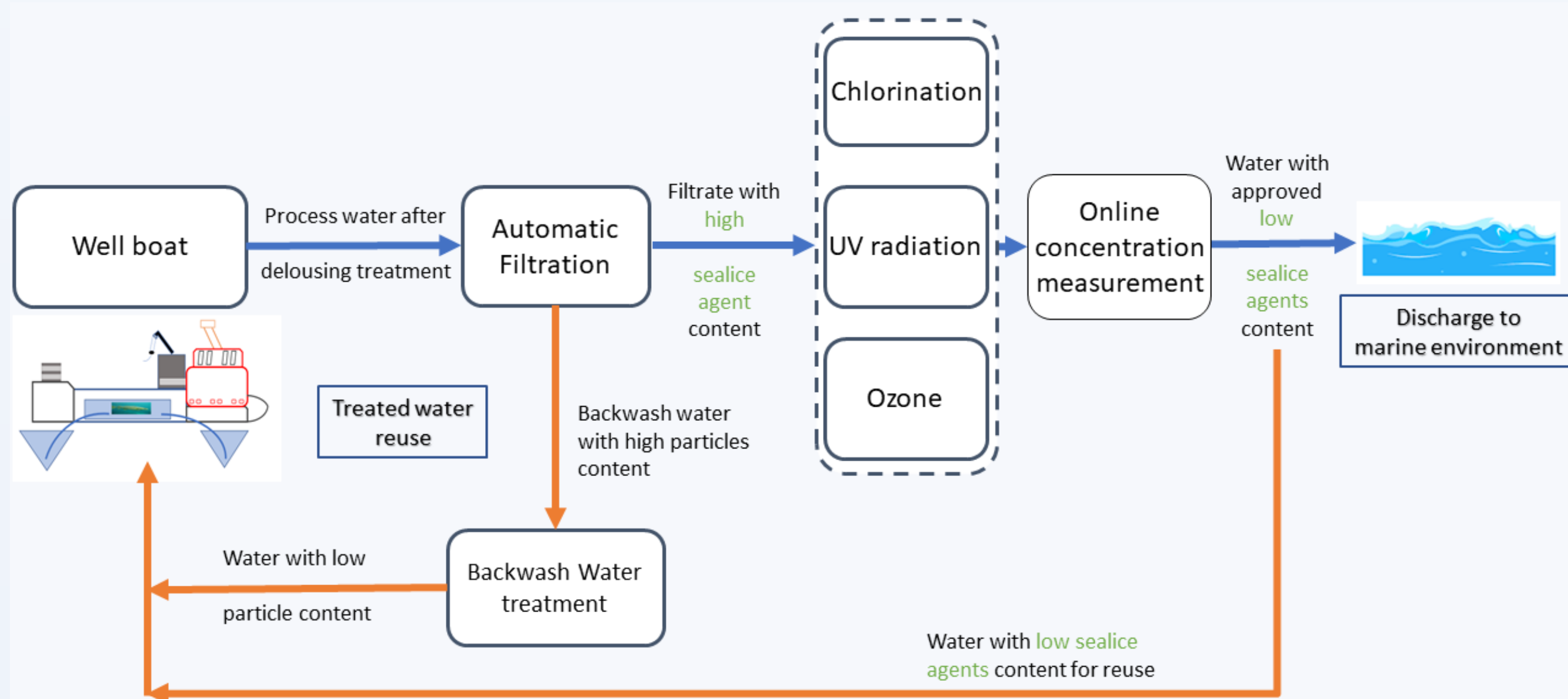
## OBJECTIVES

The aim of the WeBoat project is to develop and demonstrate an environmentally friendly and monitored marine water purification technology for post-sea lice treatment application. The WeBoat solution will provide removal and/or degradation of selected sea lice agents after marine delousing treatment of fish aboard of wellboats according to the new coming changes in the Norwegian Pollution Regulation (FOR-2004-06-01-931) and other European regulations such as 2010 Act in Scotland. Those regulations aim for the reduction of any discharge of chemical residues from wellboats, including delousing agents.

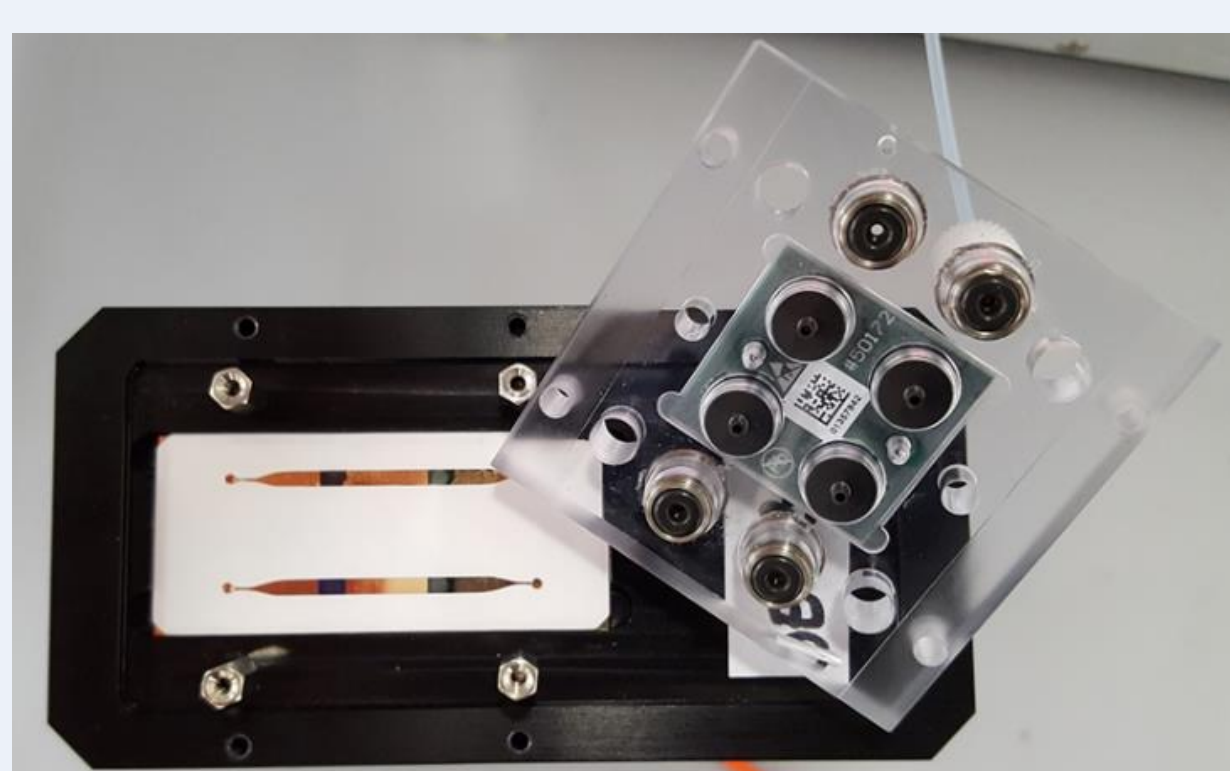


## MATERIALS AND METHODS

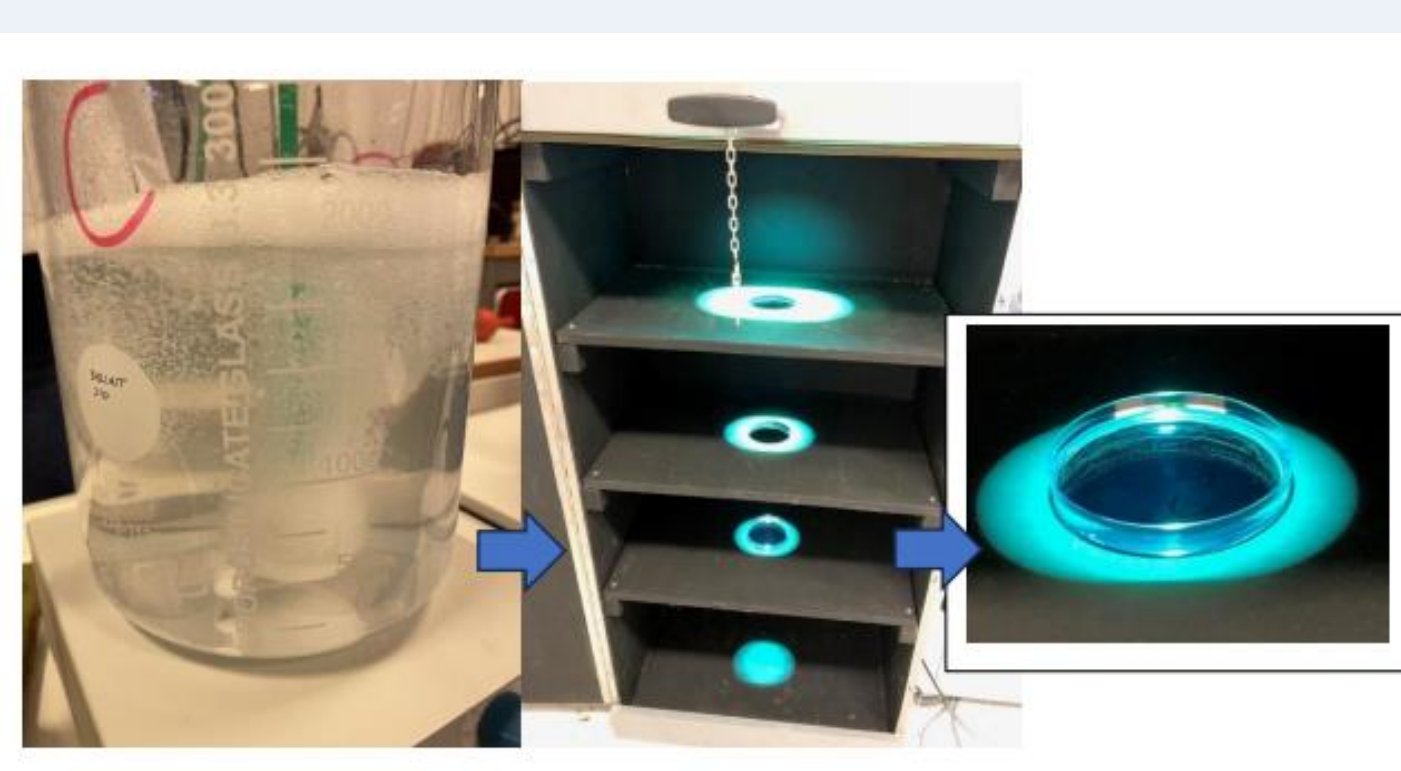
Technology concept and treatment process chain:



Sensor for detection of sea lice agents based on localized surface plasmon resonance:

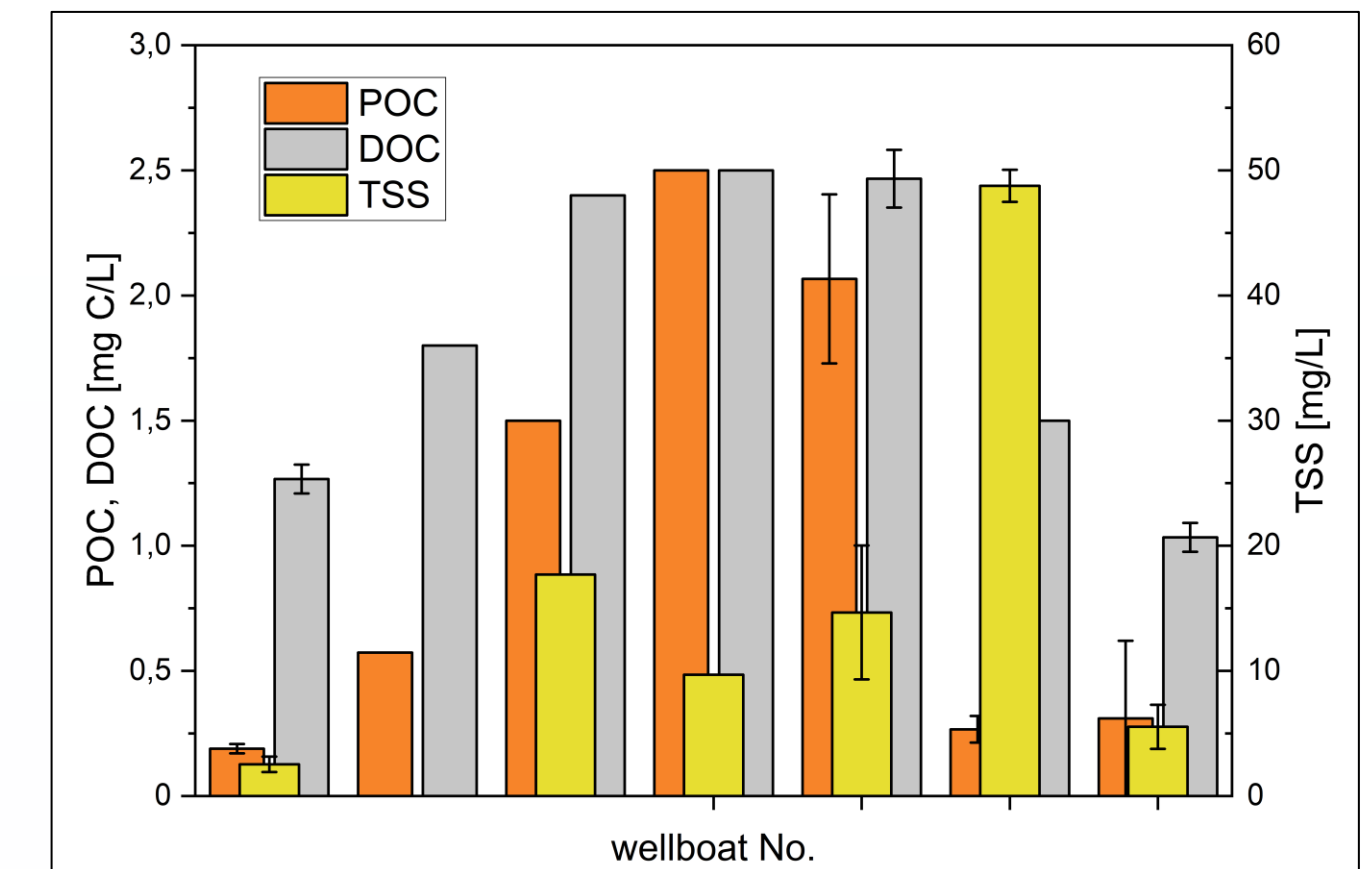
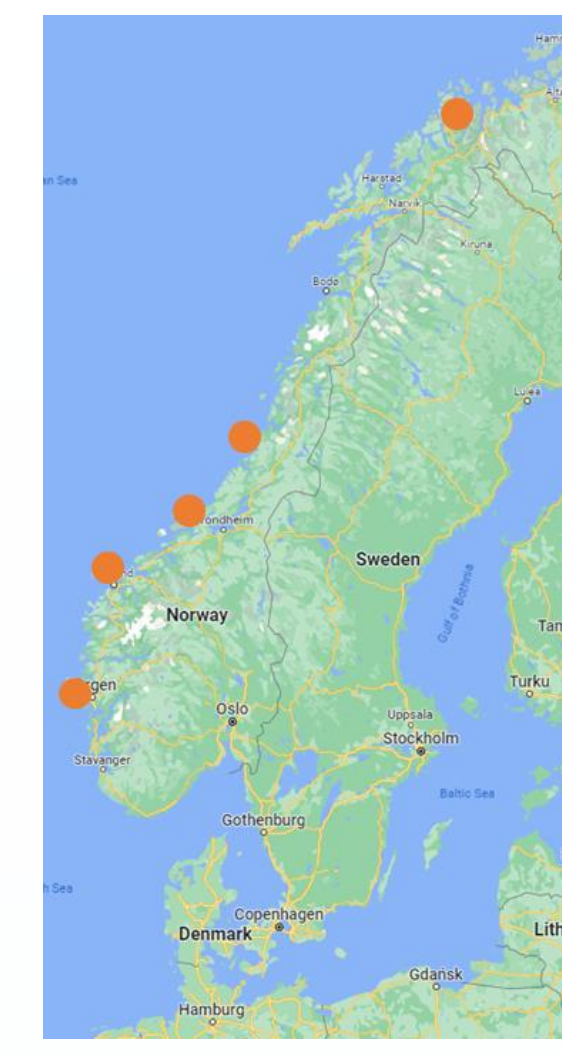


UV radiation with medium pressure ultraviolet collimated beam:



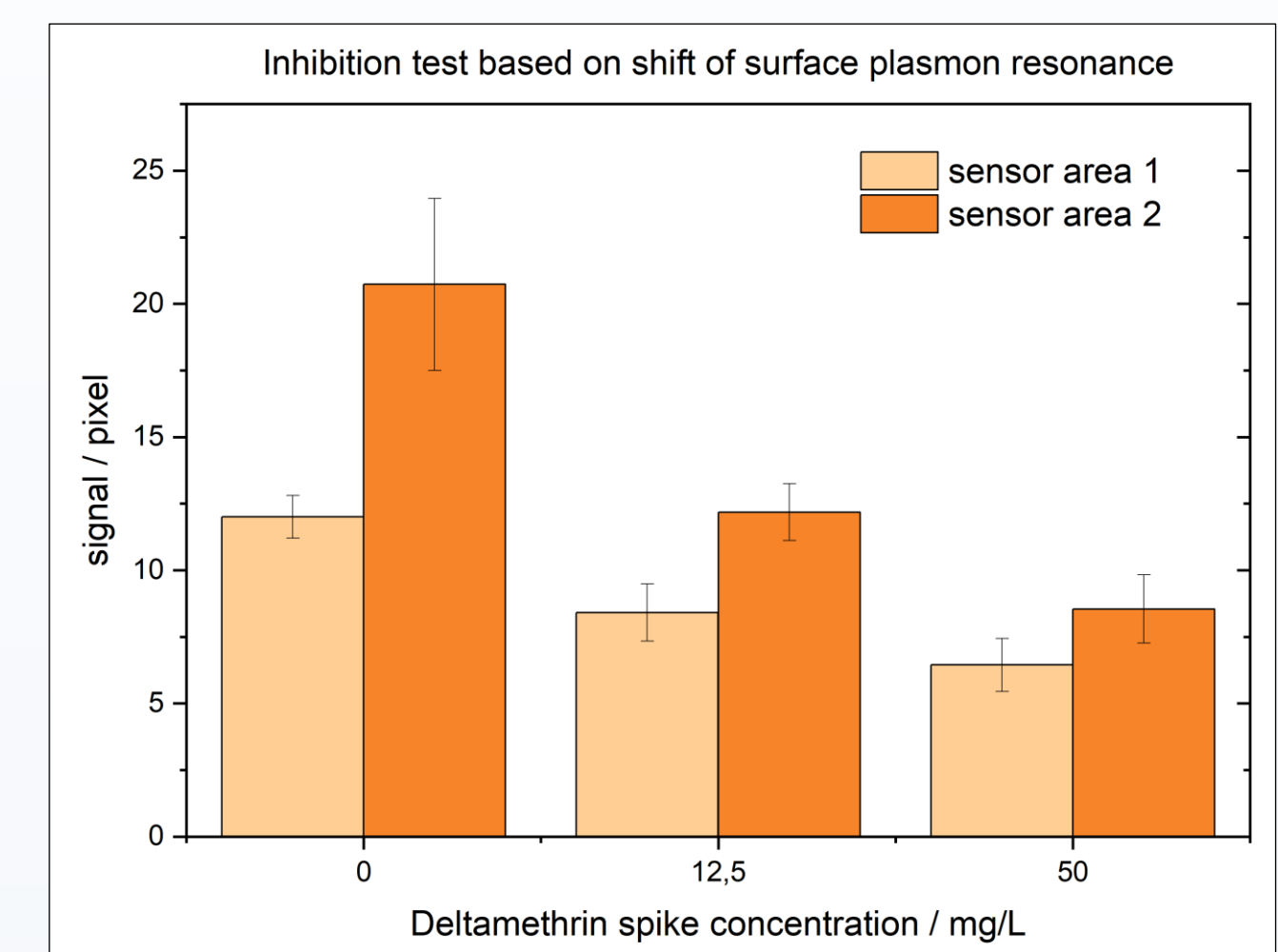
## INTERMEDIATE RESULTS

Wellboat water samples and analysis of water quality



- Filter screening test completed with filterskid at Hydac test center in Bremerhaven harbour (Germany)
- 20 different filter elements tested (>3 h operation time each)
- Data analysis ongoing, e.g. volume flow, backflushability, etc.

- Polyclonal anti-Deltamethrin antibody serum tested in inhibition assay on planar gold surface with immobilized BSA-Deltamethrin: The higher the spike concentration, the less antibody can bind to the sensor surface
- Synthesis of anti-Hexaflumuron-antibodies ongoing



## CONCLUSIONS

The WeBoat treatment of delousing water is developed and demonstrated under realistic conditions. Initially, the efficiency of pollutant removal and its monitoring are tested on a small scale before it will be verified in larger-scale trials (spiked seawater at NIVA test site) and can finally be transferred to wellboats. The analytical methods for the detection of H<sub>2</sub>O<sub>2</sub> and other sea lice agents will allow for immediate closed-loop process control of the water treatment.

This constitutes the first in-line and in-situ analysis tool for sea lice agents with new and unique data source to provide input to a real-time data platform about discharged concentrations from aquaculture facilities. Thus, more transparency is gained for the sector, farmers, consumers and regulatory authorities.



## CONTACT

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## ACKNOWLEDGEMENT

