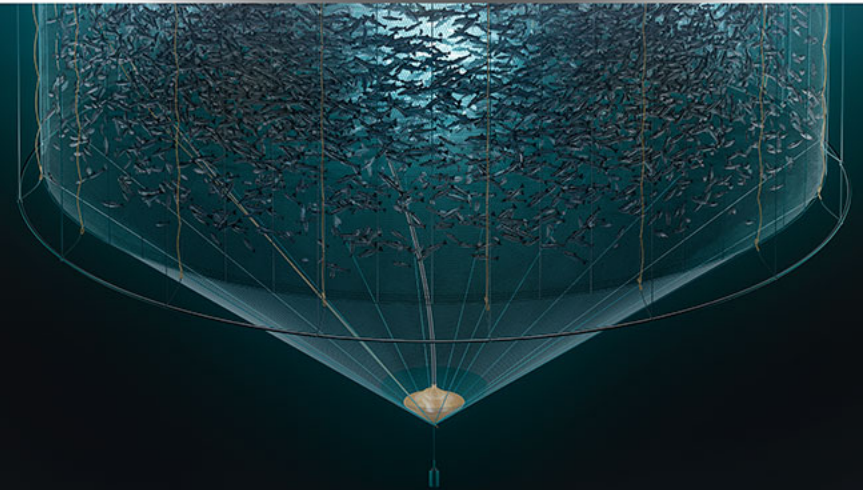


# Atlantis Subsea Farming – experiences and results

Trude Olafsen

EATiP Online Forum, 24.11.2021



Technology for sustainable biology

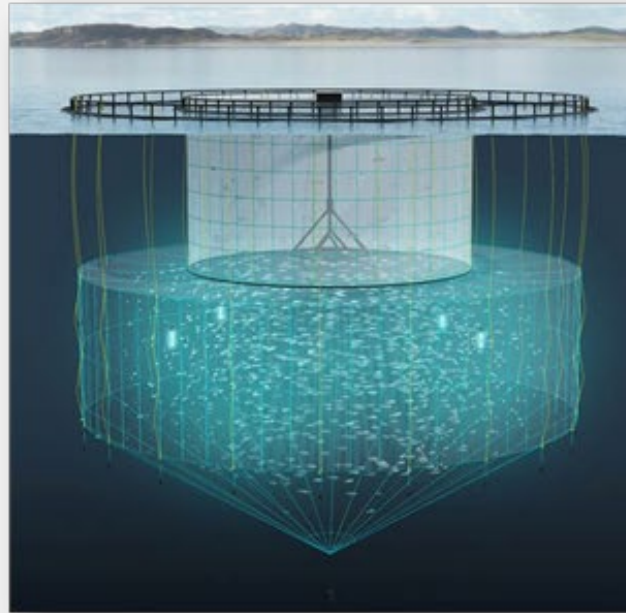
# Subsea Farming

## NAUTILUS



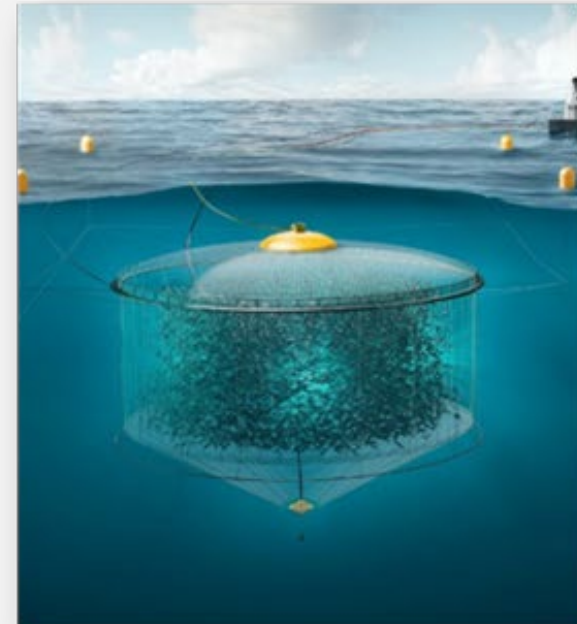
1. Access to air in the deep – ordinary sites

## TUBENET



2. Access to air through a smaller surface

## ATLANTIS SUBSEA FARMING



1. Access to air in the deep – exposed sites



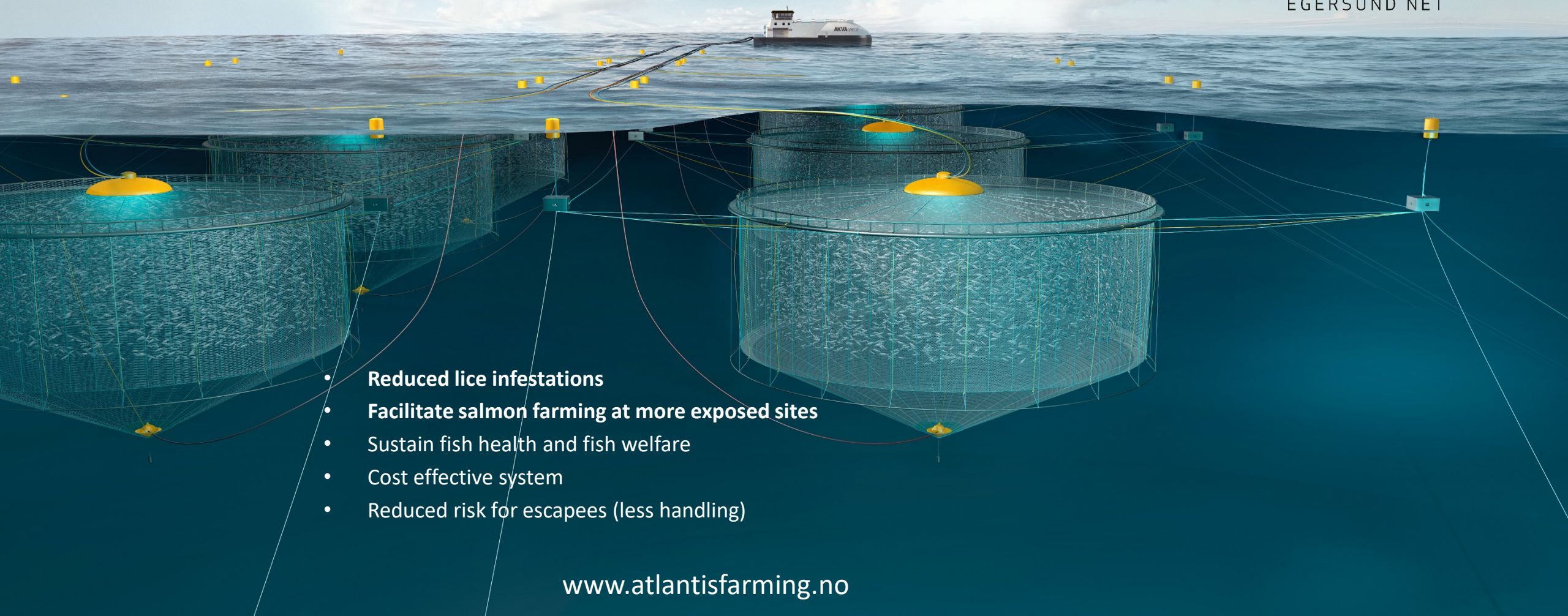
**atlantis**  
SUBSEA FARMING



SinkabergHansen

**AKVA**GROUP™

**AKVA**GROUP™  
EGERSUND NET

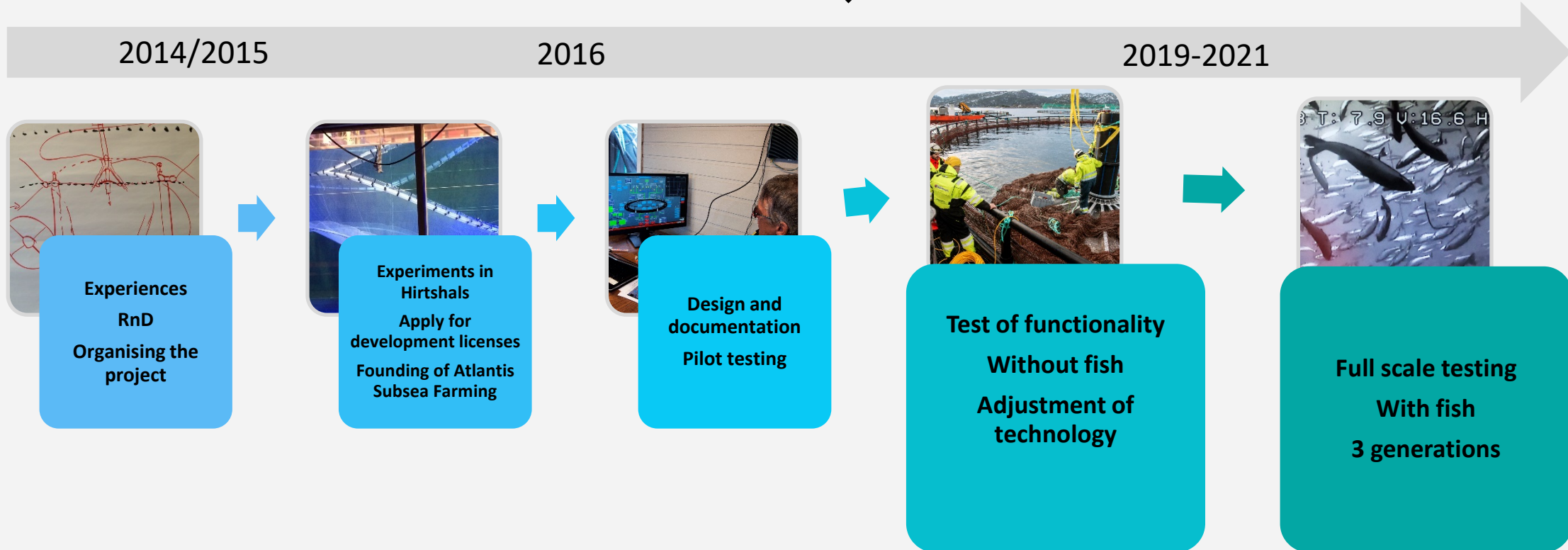


- **Reduced lice infestations**
- **Facilitate salmon farming at more exposed sites**
- Sustain fish health and fish welfare
- Cost effective system
- Reduced risk for escapees (less handling)

[www.atlantisfarming.no](http://www.atlantisfarming.no)

# Timeline

1 development license

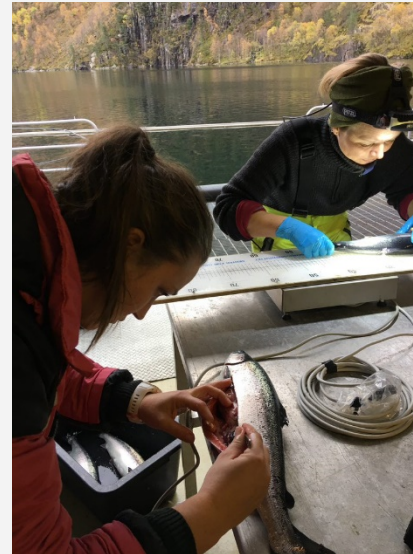
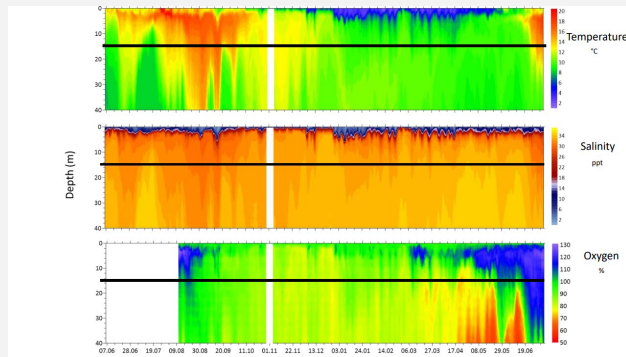


# Understand the biology and the environment

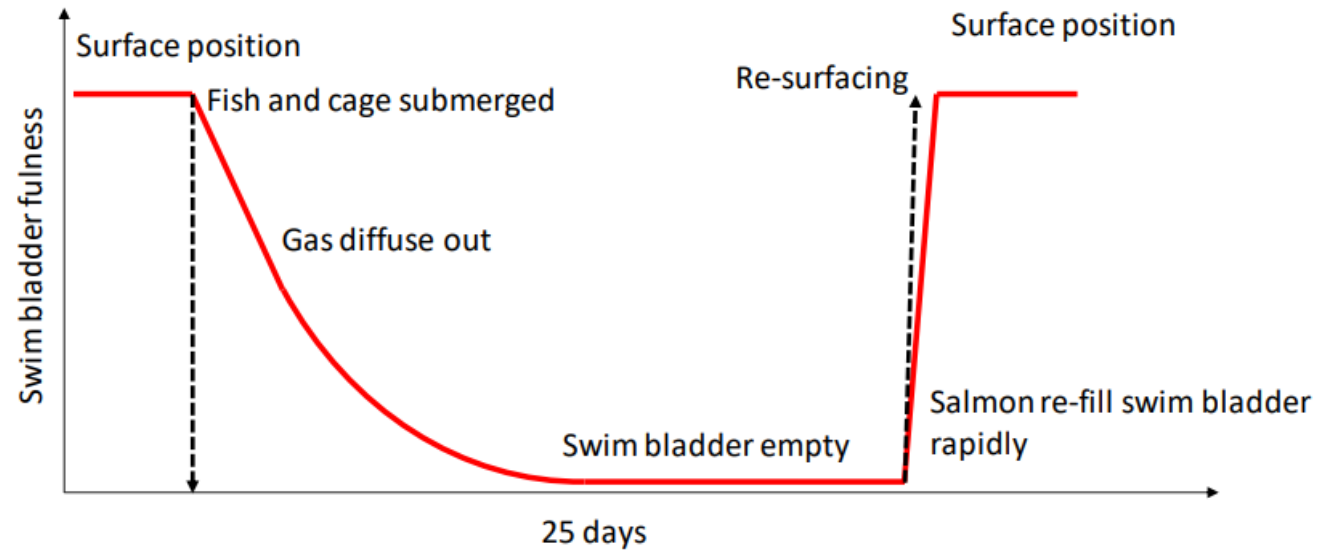
Collaboration with the Institute of Marine Research - Frode Oppedal and his group

## Focus

- Air dome; find the right size and behavior related to the use of air dome
- Fish welfare
- Production elements (feeding, growth etc)
- Control and monitoring the lice situation
- Environmental conditions at the sites



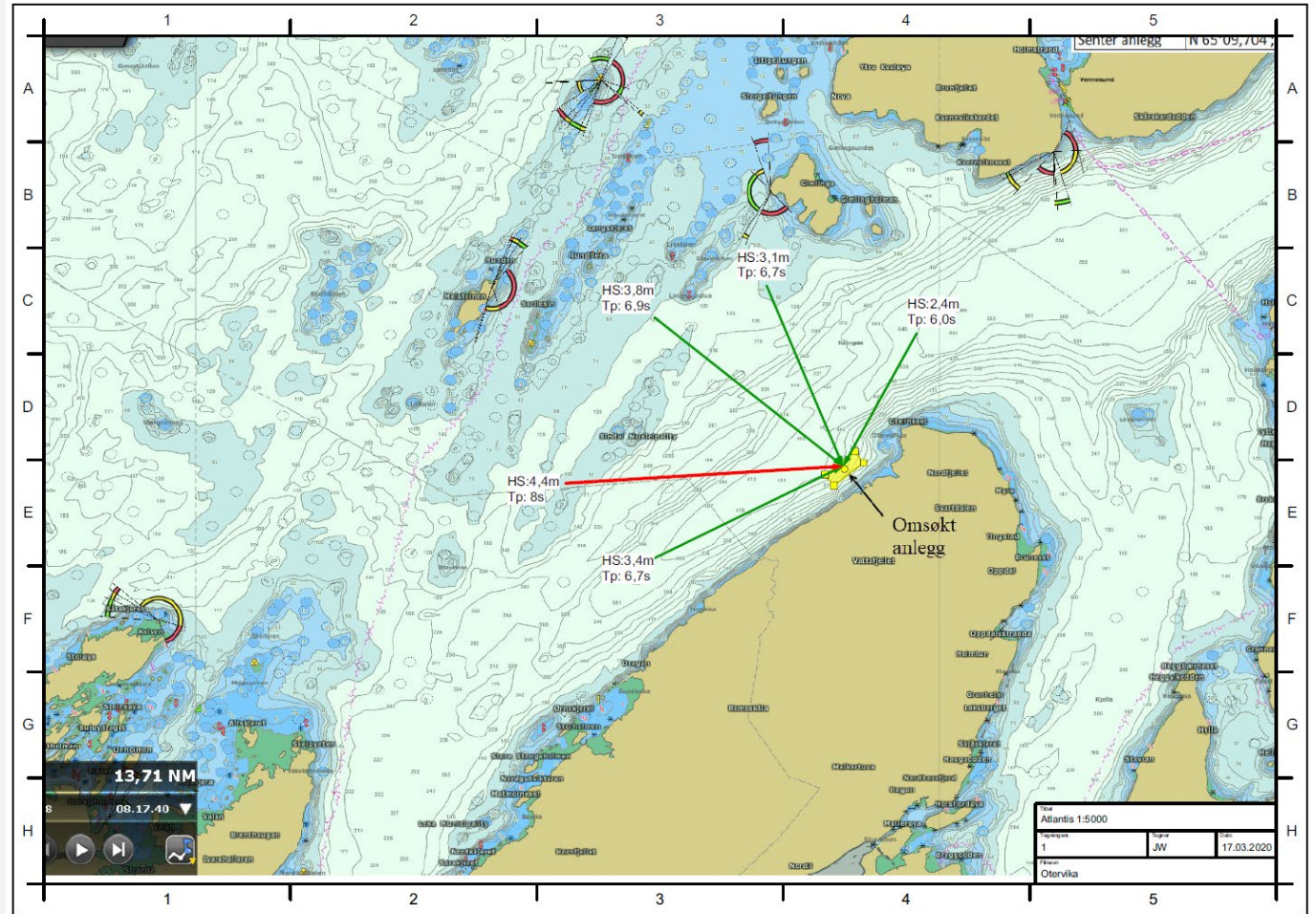
# The salmon empties the swim bladder



Korsøen PhD Thesis

# Third production cyklus at Otervika

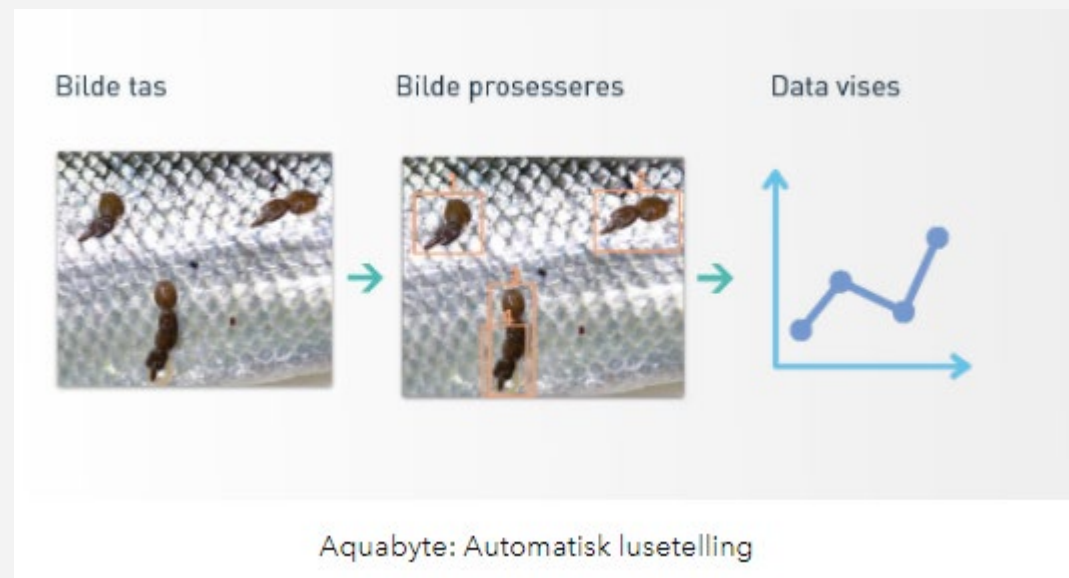
- Challenging location
- Wave height Hs 4,4 m
- Currents 1 m/s
- 4 submersible cages – 2 with fish
- From 1,7 kg to 4,0 kg in 5 month

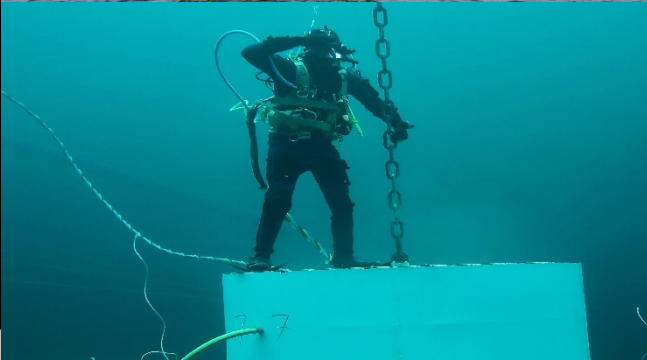
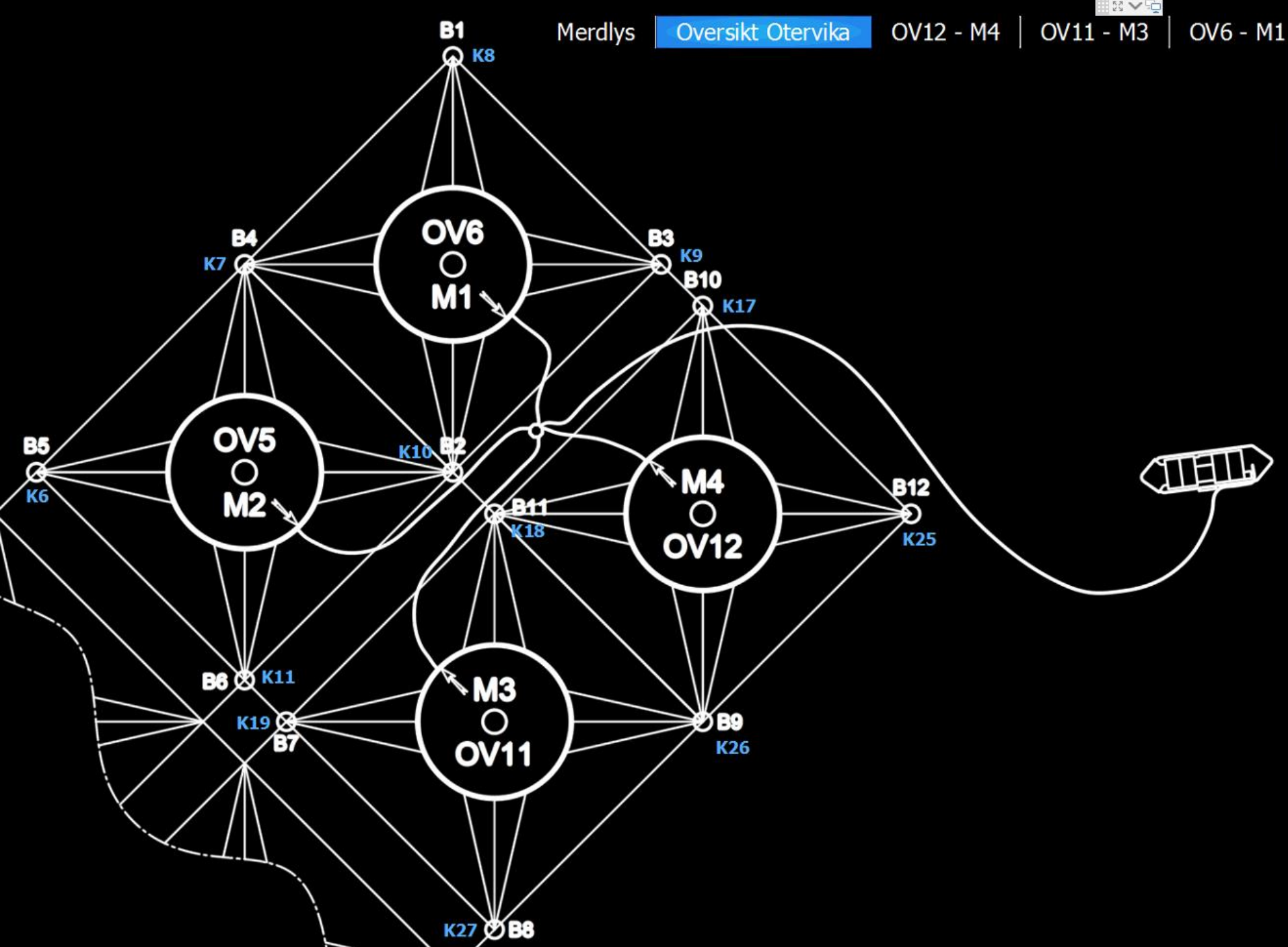


# Surveillance and lice counting in the deep

- Aquabyte system counted lice and measured biomass
- Nine fixed cameras in order to monitor airdome activity, fish behaviour, feeding etc
- 4 Aurora Sub Led «working» lights

## Aquabyte System for Automatisk Lusetelling (ASAL)



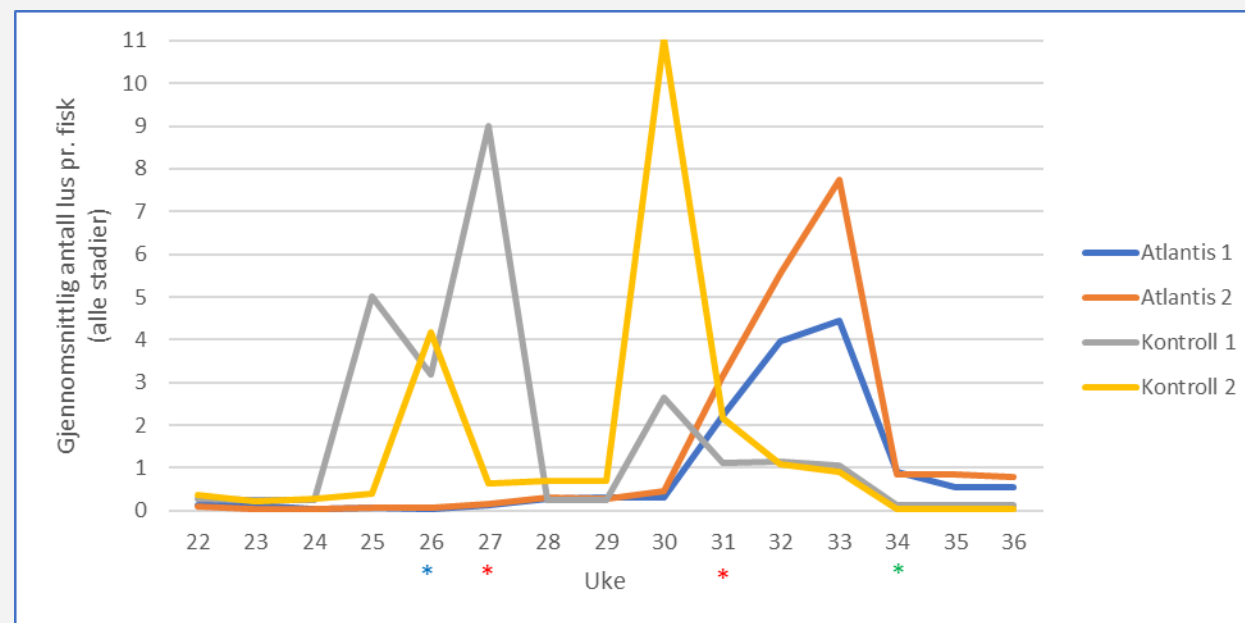


# Atlantis control room



# Fish performance

- The salmon learned to use the air dome in order to fill the swim bladder
- Behavior and fish health is good
- Feed conversion ratio, growth, mortality and harvesting results shows normal values
- Much less challenges with salmon lice
- We had to delouse once – and the reason was probably infection from an ordinary delousing operation in the control pens earlier that summer



*Lice numbers counted in Atlantis 1, Atlantis 2, control 1 and control 2 from week 22 to 36. The lice numbers are given as the average number of lice per fish per week, all lice stages combined. Blue star marks where the control cages had Slice treatment, red stars mark where the control cages had non-drug treatment and green star marks where all cages had undergone non-drug treatment.*

# Lessons learned

- The fish must be free of lice when transferred to the cage
- Avoid to take the cage to the surface as much as possible - automatic lice surveillance is necessary
- All cages in a site should be submerged
- Pick the right site!



**Thank you very much  
for your attention!**

[www.atlantisfarming.no](http://www.atlantisfarming.no)

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**AKVAKULTUR**  
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**ENTUSIASME!**

