

DEPARTMENT FOR AQUACULTURE TECHNOLOGY



Department for Aquaculture Technology

Ambition

Create and deliver excellent **technological science and competence** for sustainable value creation in an **international aquaculture industry**

Two research groups (27 people)

- Aquaculture Structures and Systems
- Aquaculture Operations

SINTEF ACE

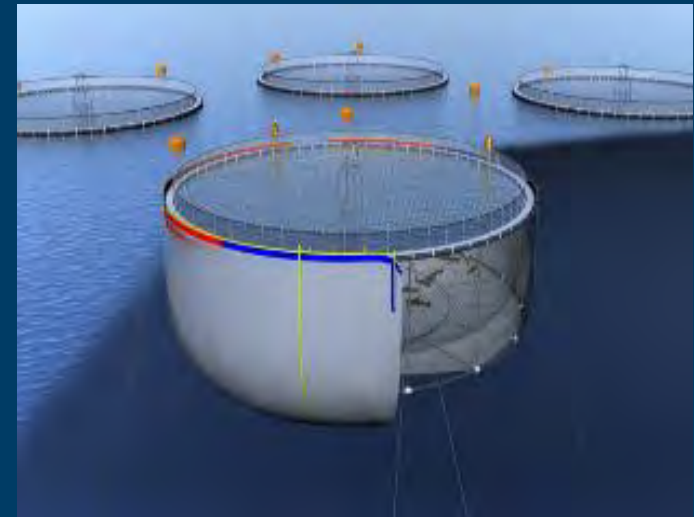
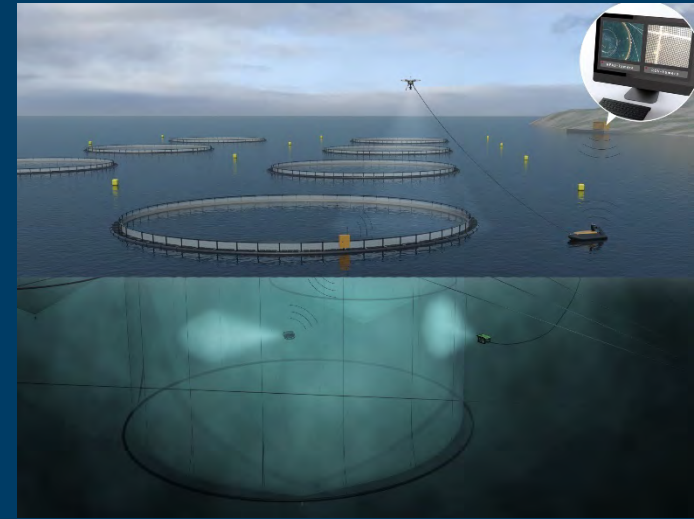
- Full scale field testing of aquaculture technology



The challenges of the aquaculture industry is **our research areas**

– with a focus on technological-biology interactions

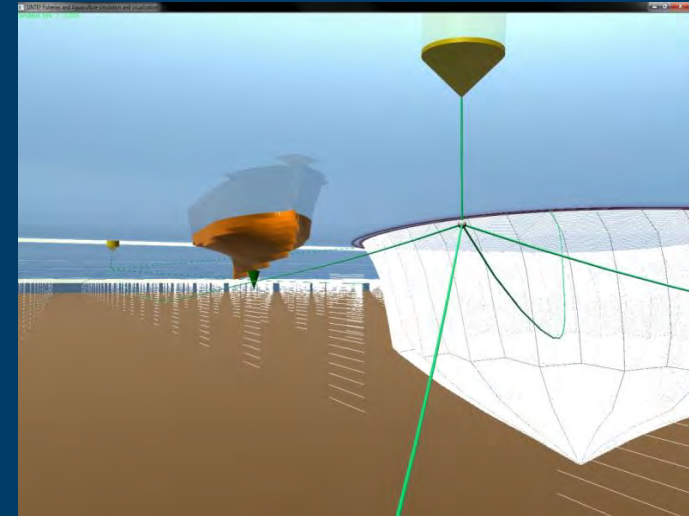
- Floating farming structures
- Closed containment system – land and sea
- Maritime aquaculture operations and vessels
- Biomass control, feeding technology and cage environment
- Bio-fouling, control and treatment of sea lice and parasites
- Site and cage environment and conditions
- Decision support systems (Precision Fish Farming)



Our key competence

- multi disciplinary needs

- Marine structural mechanics and hydrodynamics
- Fluid mechanics
- Mathematical modelling, simulation and analysis
- Marine cybernetics and control
- Instrumentation, data capture, communication and data interpretations
- Mechanical engineering and design
- Human factors and physical work conditions
- Marine and Aquaculture biology



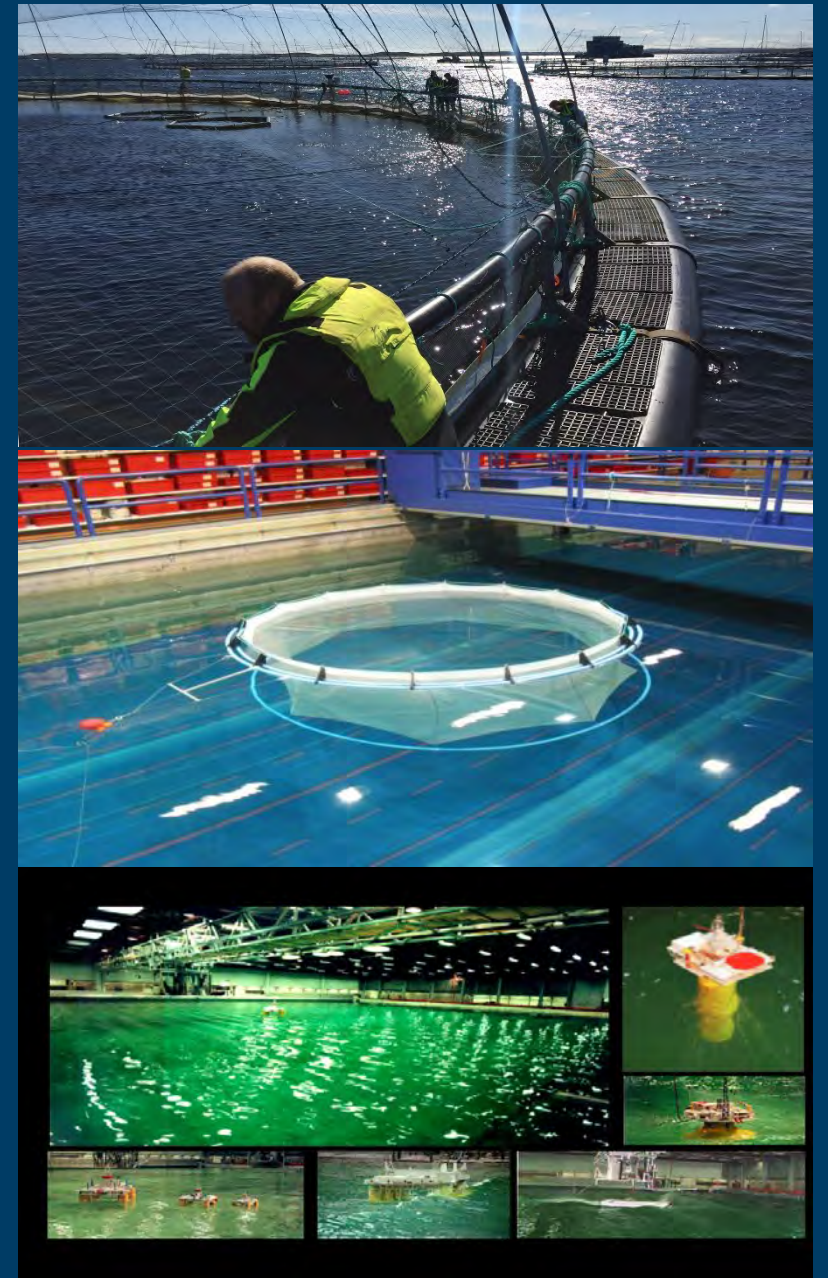
Research projects

- Fundamental, applied and industrial
- Development and innovation
- Verification and testing
- Single and consortium projects
- Private, public and combinations
- Numerical, model scale and full scale/field testing



Research infrastructure

- SINTEF ACE - Industrial scale fish farm
- SINTEF Flumetank - Circulating water tank
- SINTEF Marine technology laboratories
- SINTEF e-Infrastructure

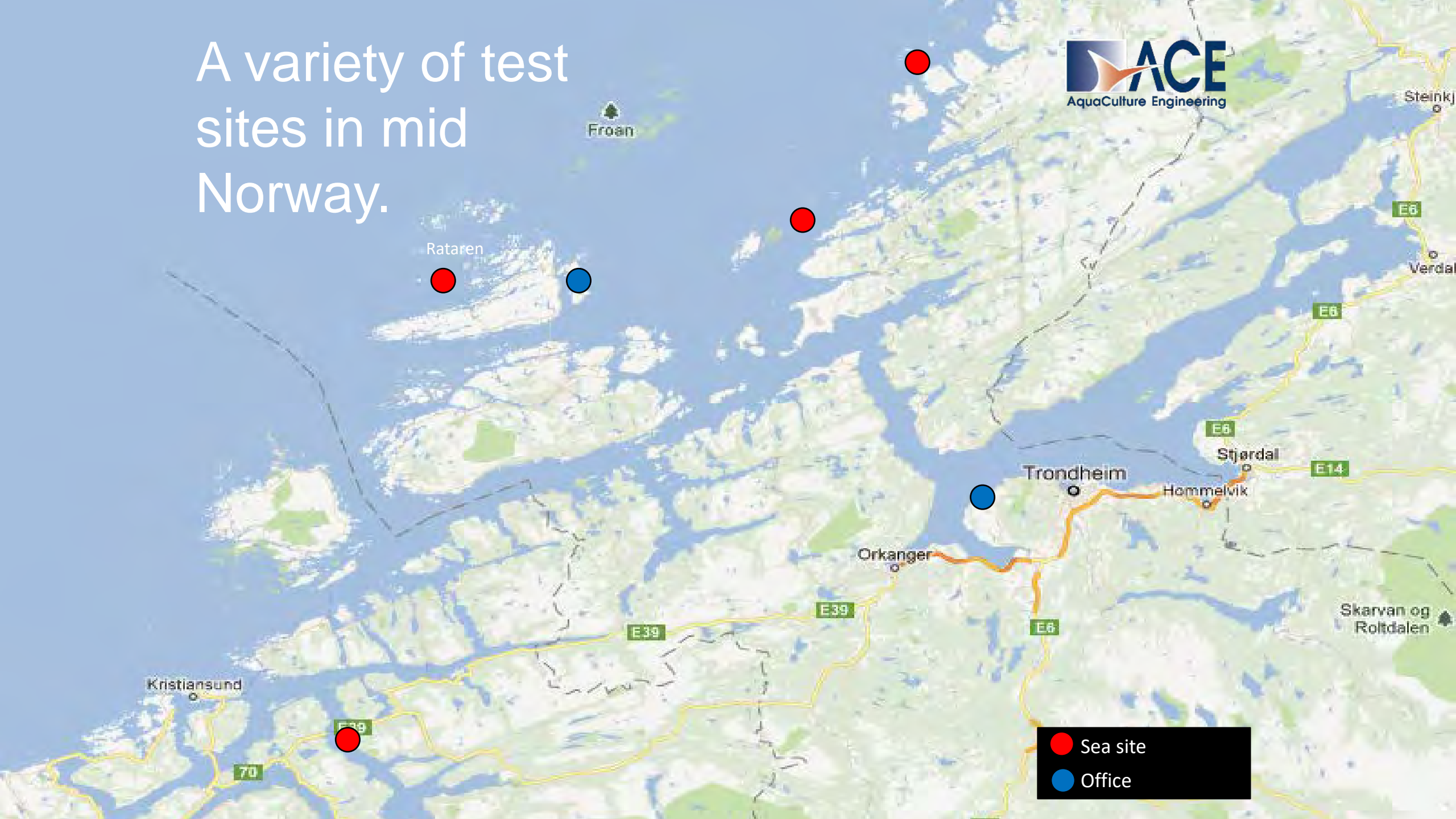


SINTEF ACE

- Full scale test center for aquaculture technology and systems
- Part of a commercial fish farm
- Available for industry and other research institutes
- Part of AquaExcel 2020 (www.aquaexcel2020.eu)



A variety of test sites in mid Norway.



- Sea site
- Office

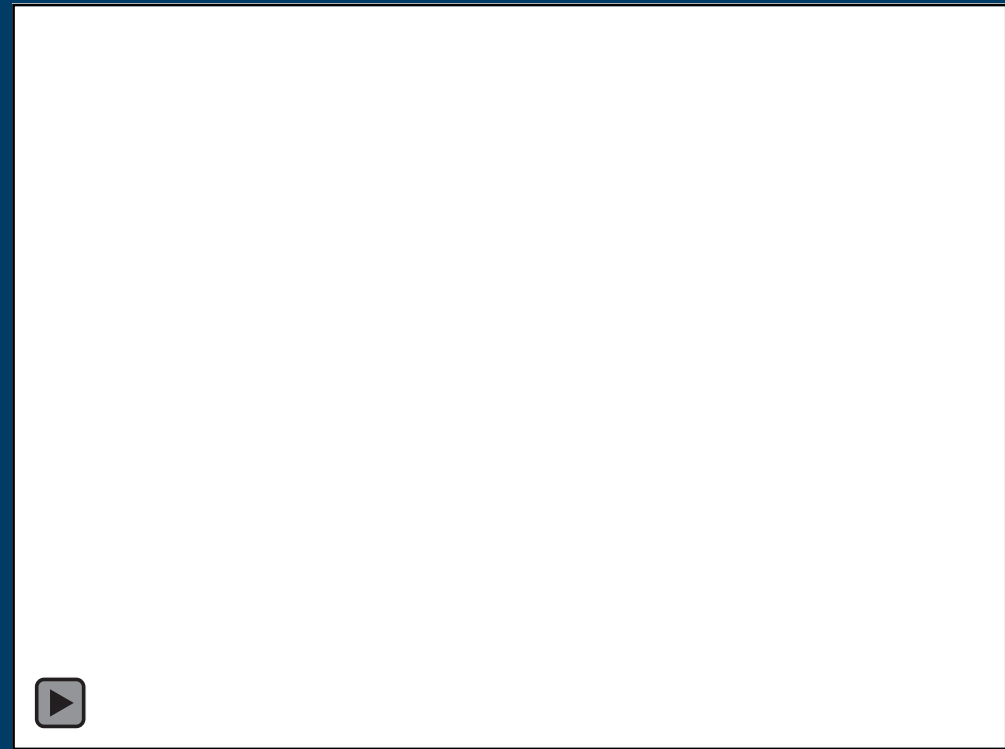
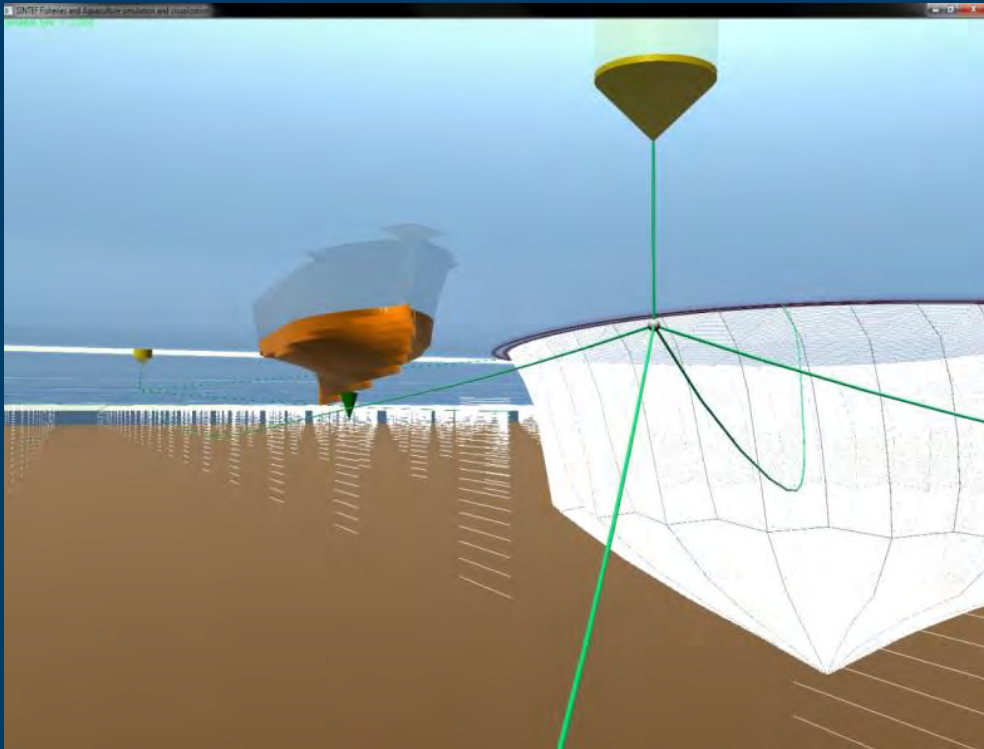
Equipment

- Torra – 12,5 meter vessel
- Research-ROV
- 2 wave and current buoys
- Instruments to measure water quality, STD, chlorophyll, O2 etc.
- Equipment to measure loads and accelerations
- Current profilers, echo sounders, cameras etc. for the farming

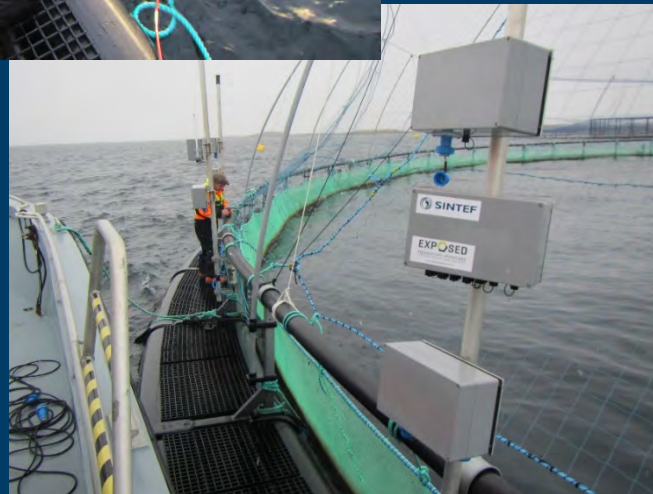
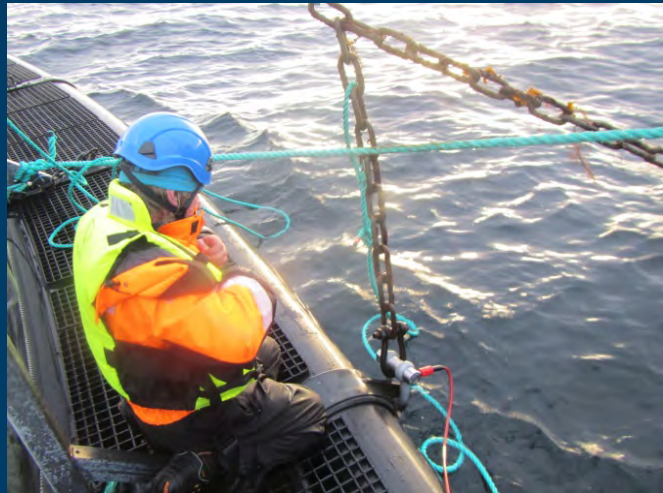


EXAMPLE RESEARCH ACTIVITIES

Numerical simulation of complex coupled systems

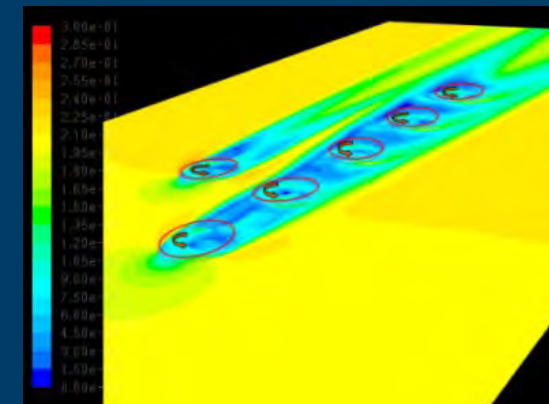
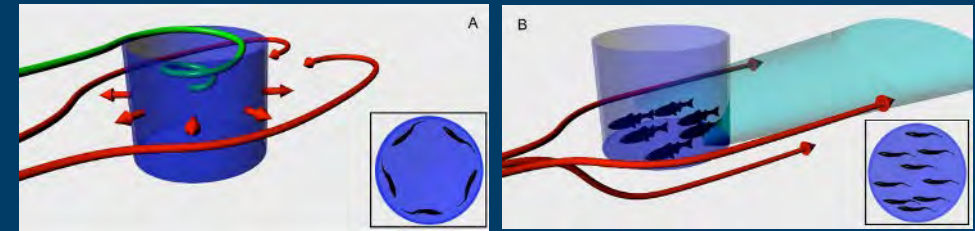
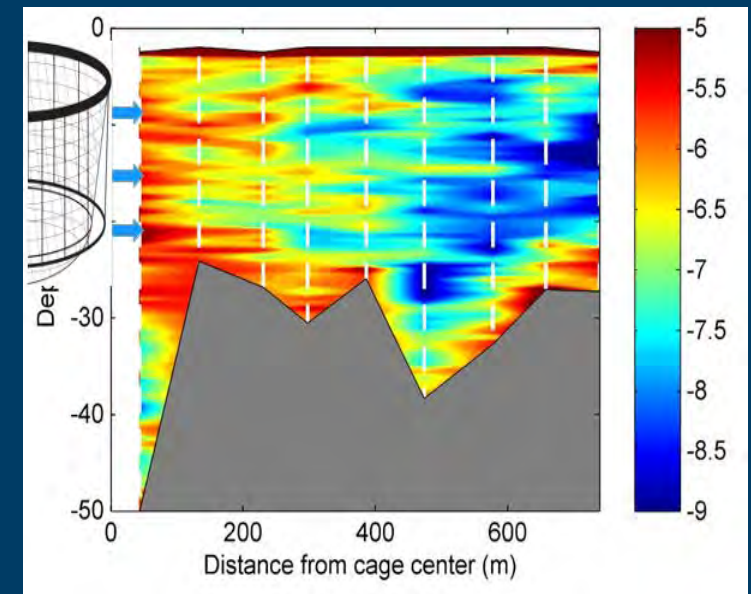


Field tests and load measurements

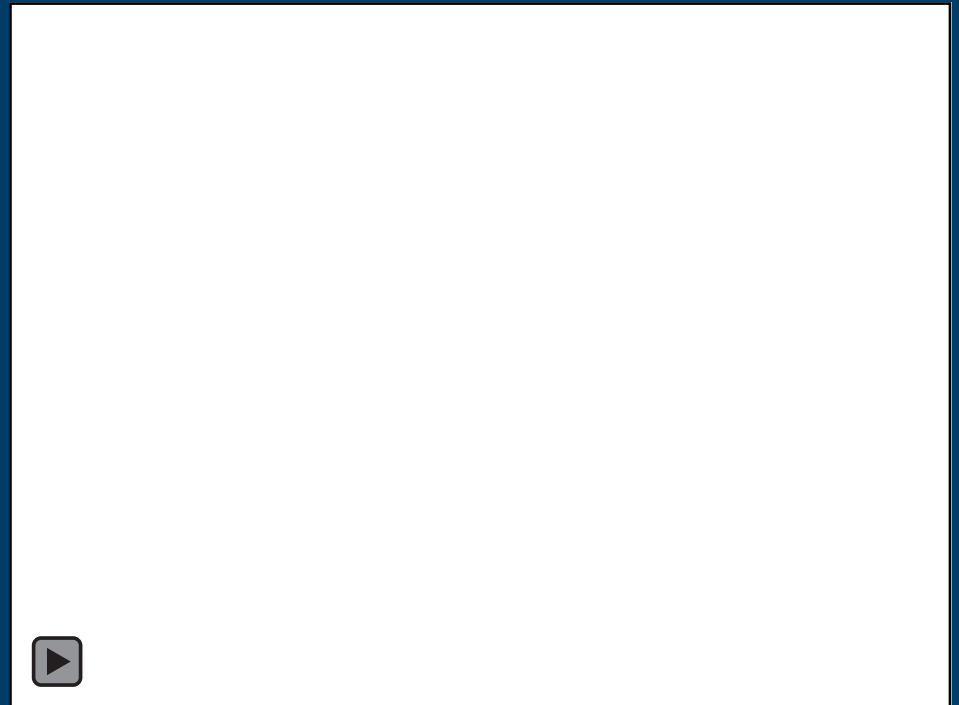


Environment in the cage

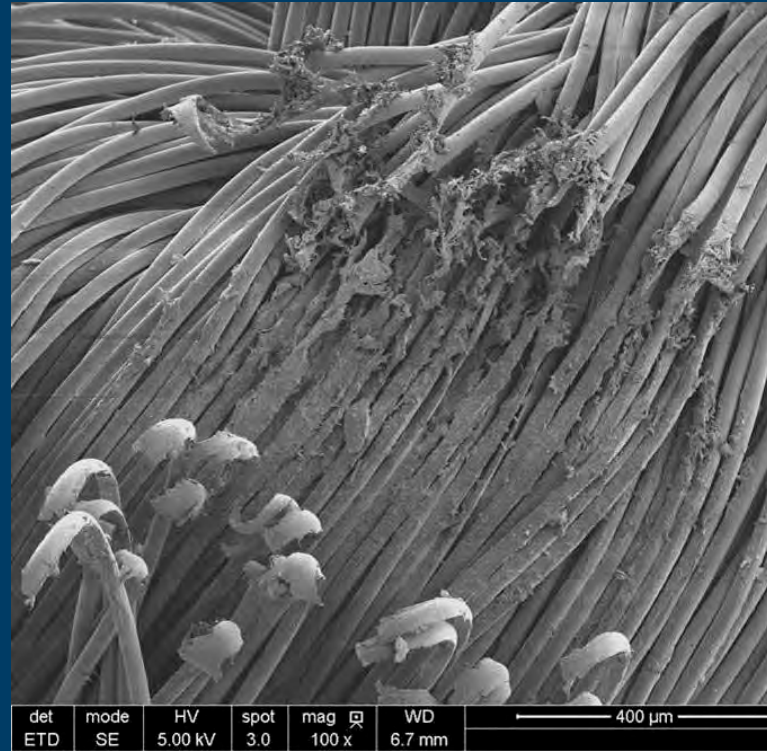
Current around and inside the farm



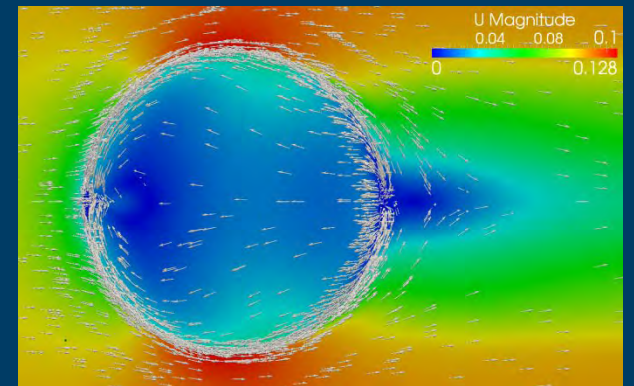
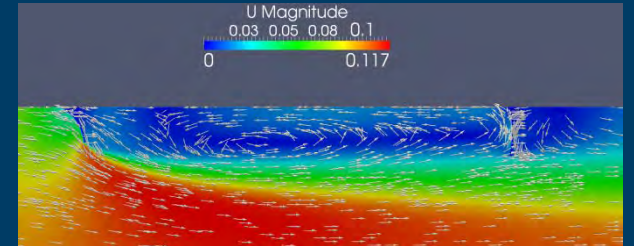
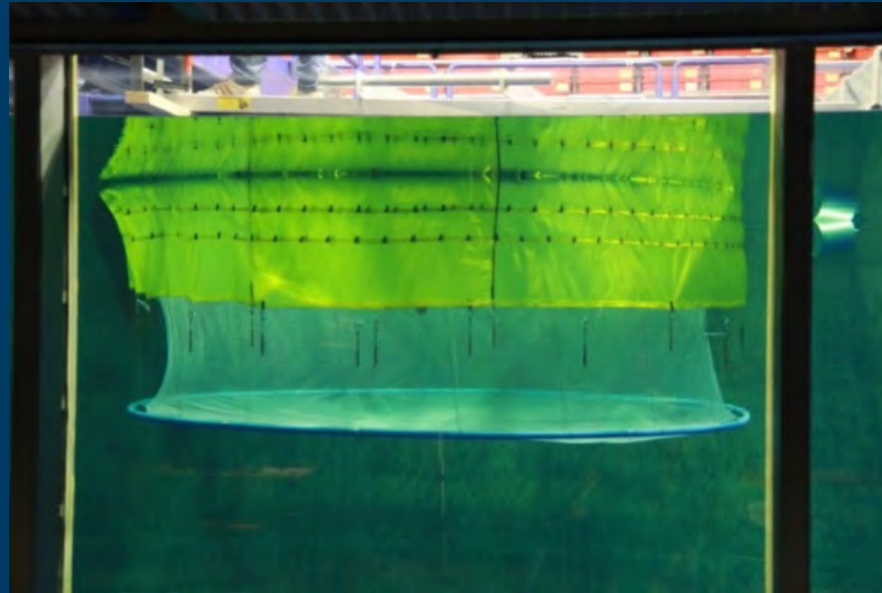
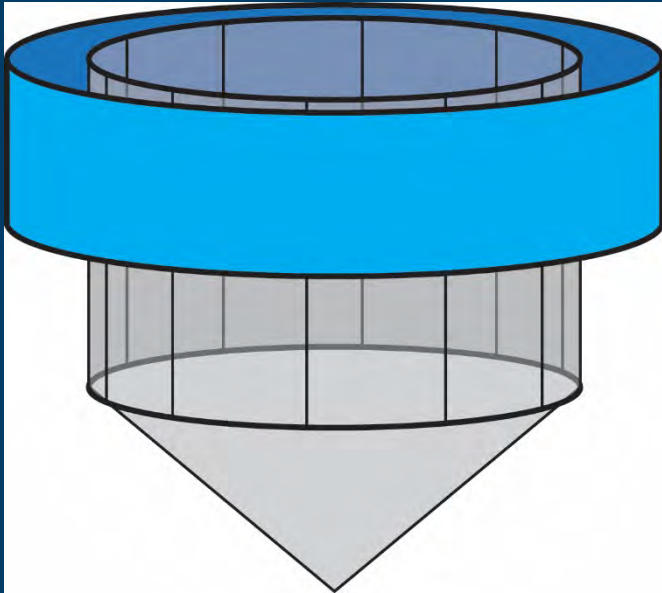
Closed floating fish farms



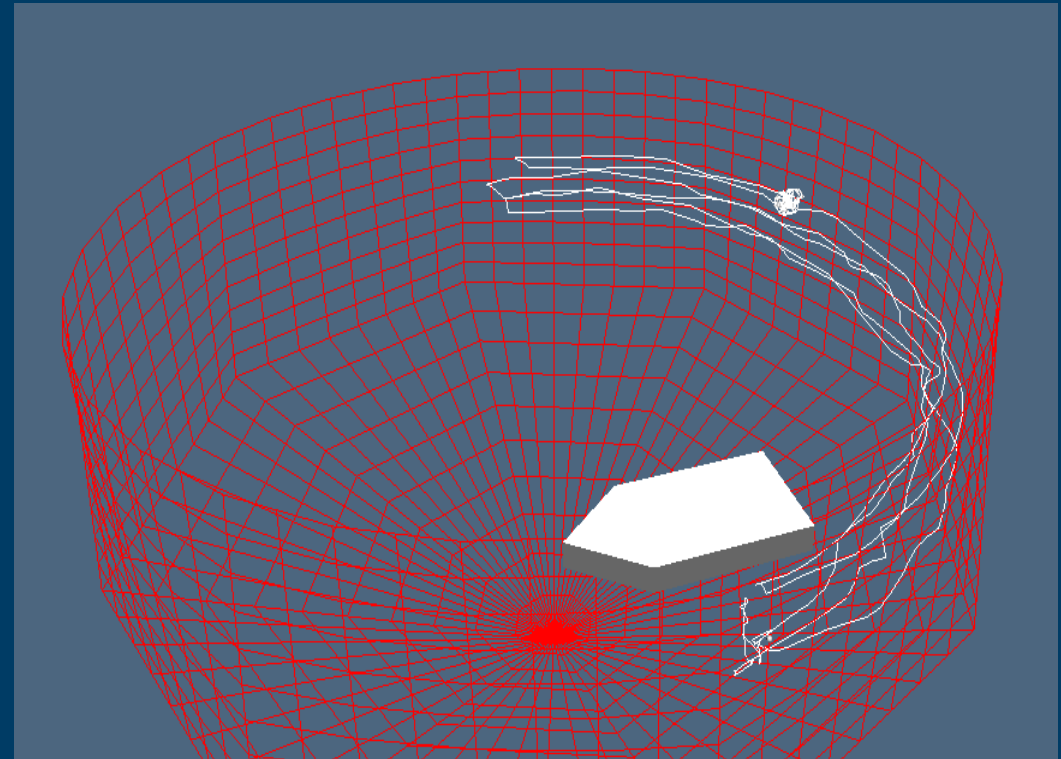
Net structures and material

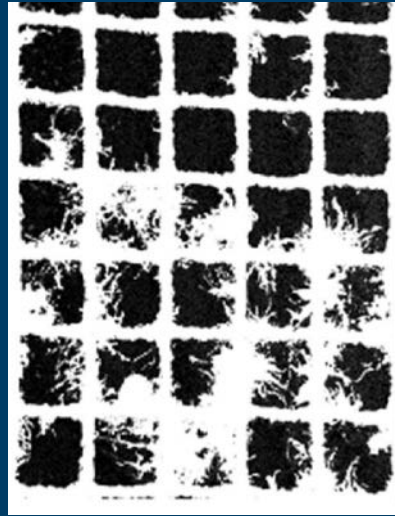


Shielding for sea lice



Vessel design and marine operations

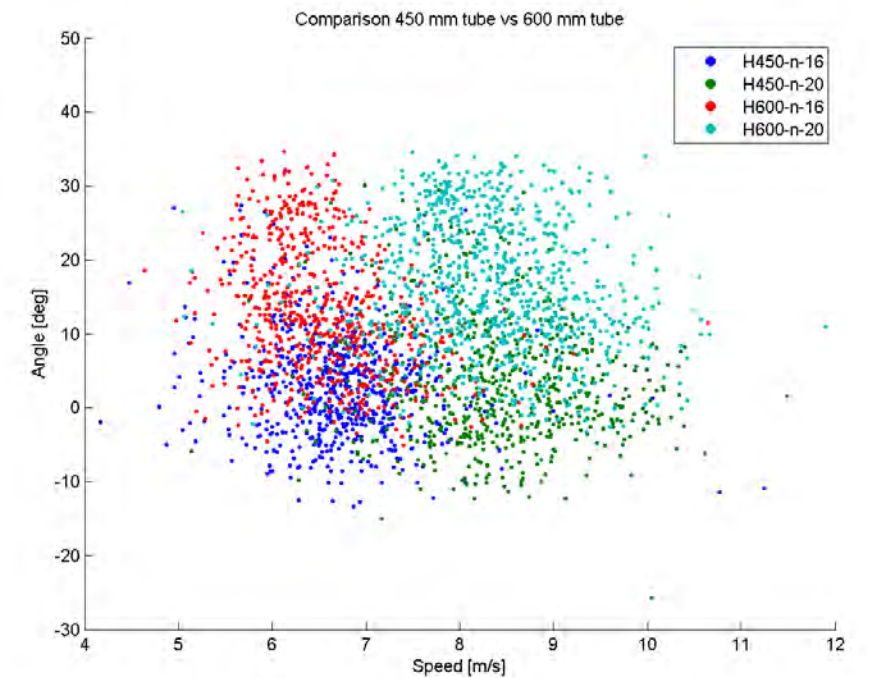
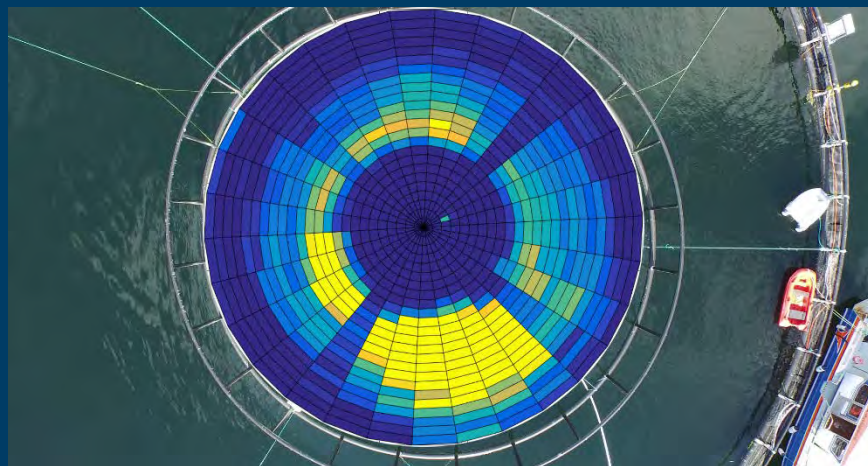
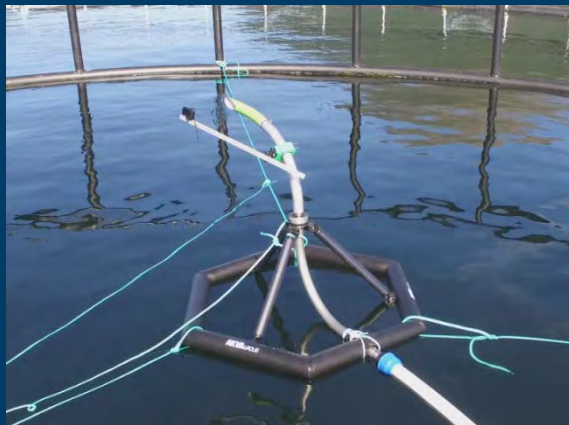




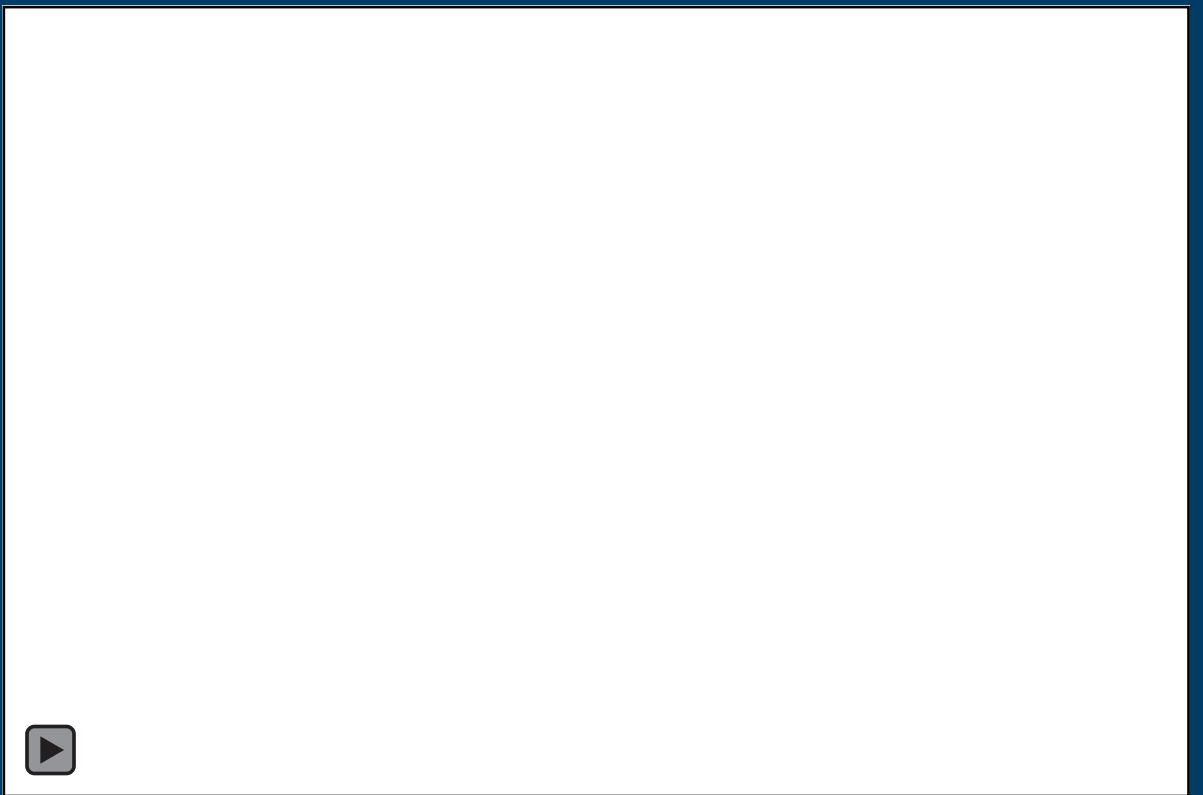
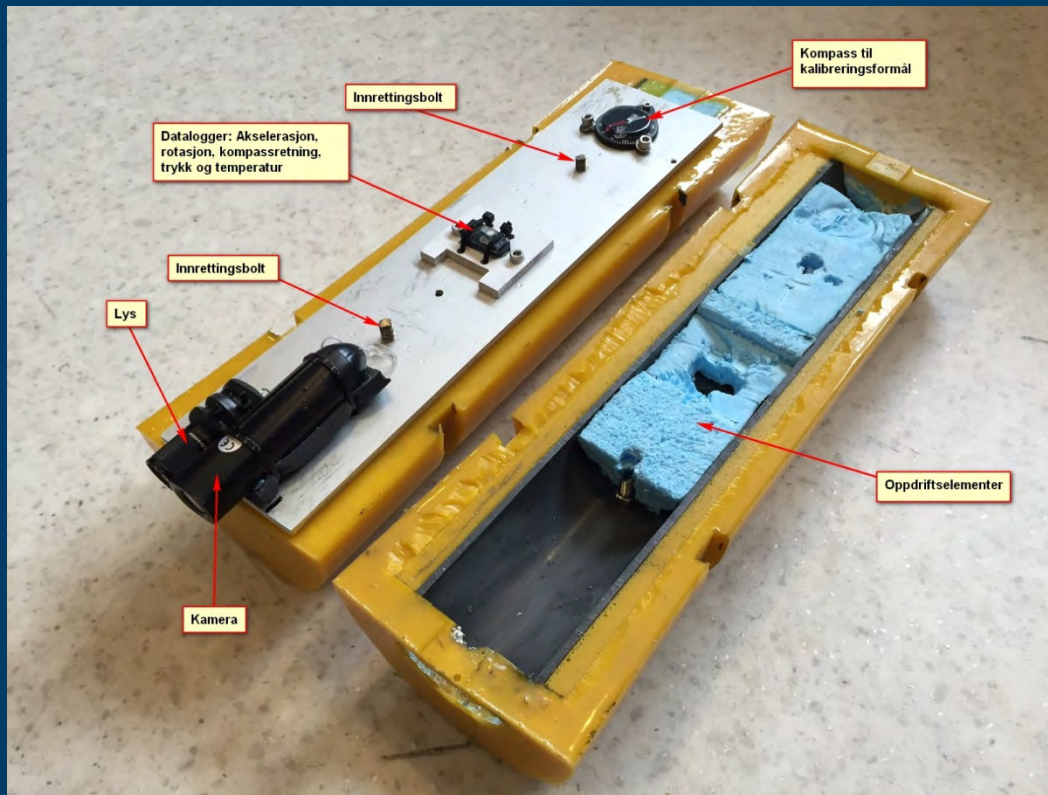
Enabling technologies (computer vision and sensors)



Feedcontrol



"Sensorfish" – measurement of what the fish experience



EXP^{II}POSED

AQUACULTURE OPERATIONS
CENTRE FOR RESEARCH-BASED INNOVATION

The Exposed Aquaculture Operations Centre will draw upon Norway's strong position in the aquaculture, maritime and offshore sectors to enable **safe and sustainable seafood production** in exposed coastal and ocean areas.

The centre is funded by the **Norwegian Research Council** and the **centre partners**, has a planned duration of 8 years, starting in 2015 and a total budget of 200 MNOK.

Will develop knowledge and technology for **robust, safe** and **efficient** fish farming at exposed locations

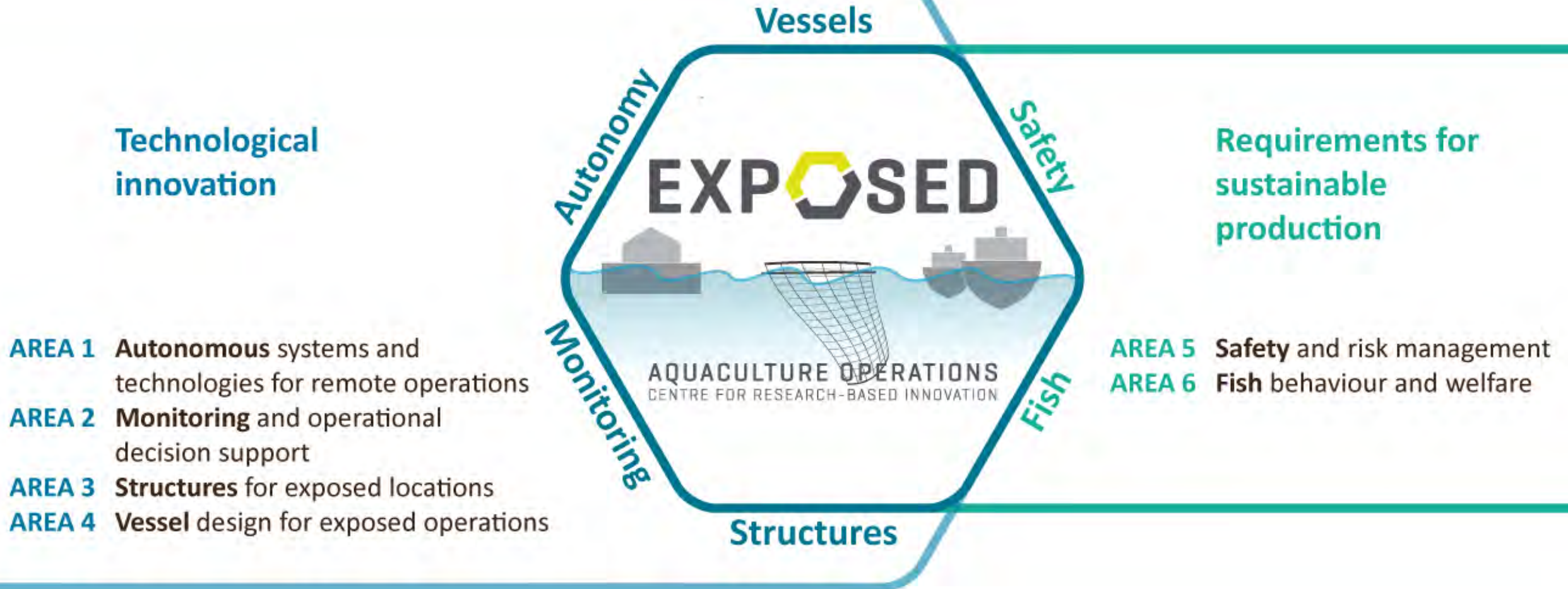


Photo: Salmar

A long-term alliance between industrial and research partners



6 research areas





Technology for a better society