

About SINTEF Fisheries and Aquaculture

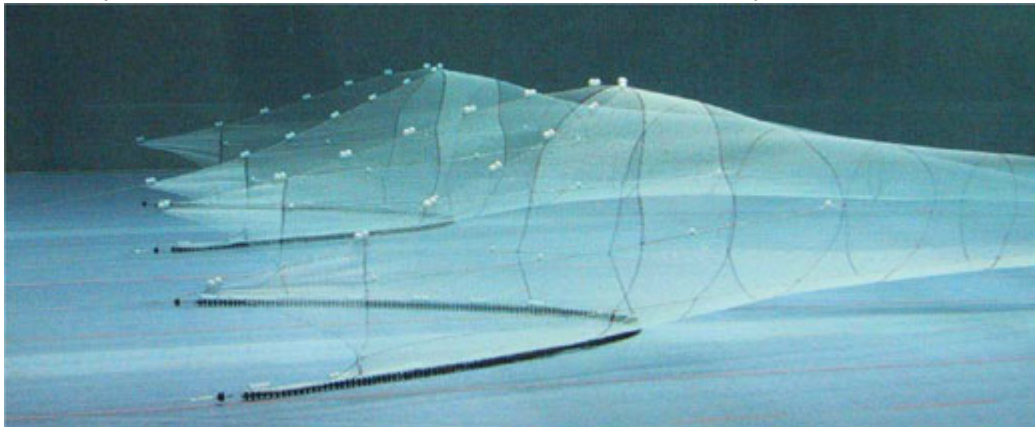
SINTEF Fisheries and Aquaculture is a part of the SINTEF Group, based in Trondheim, Norway. SINTEF Fisheries and Aquaculture represents technological expertise and industry knowledge in the utilization of renewable marine resources. Under the vision "Technology for a better society" we are working for a knowledge-based bio marine industry. Our goal is to meet market demands for technological research and development on renewable marine resources. Our expertise, interdisciplinary approach and industrial knowledge provide our customers with added value in all the projects we undertake.



Through cooperation within the SINTEF Group, we can integrate our own expertise with cutting edge knowledge from other industrial sectors (industrial materials, ICT, medicine, etc.) into the fisheries and aquaculture sector.

The flume tank in Hirtshals

The core products are research projects and commercial testing of equipment for fisheries and aquaculture. Numerous trawls have over the years been tested here, and fishermen, breeders and net manufacturers have learned to optimize the use of their gear. Also most new developments and selectivity devices have had a round in the flume tank before they went to sea, for the final tests.



The flume tank has been upgraded continuously and stands today as a very versatile test facility. For instance, a recent installation of a modern 3D measuring video rig completes the setup.

Net manufacturers and fishing companies from all over the world know the flume tank and the value of the services. But the expertise housed also encompasses services for other branches of marine industries: test of fish cages for marine aquaculture, test of sub-sea templates and pipelines for the off-shore oil and gas industries, test of ROV's for inspection and surveillance etc.

Master theses

SINTEF Fisheries and Aquaculture is happy to announce the opportunity for students to accomplish their thesis in cooperation with us. We are able to provide access to an exciting infrastructure, and will help supervising the students. An MSc project is a good opportunity for students to accomplish projects in cooperation with an industrial research institute, and an excellent first step towards possible future employment in SINTEF or other industrial companies. The student has to arrange the formal contact with a supervisor / professor at their university and make agreements with SINTEF's contact person for the actual project.

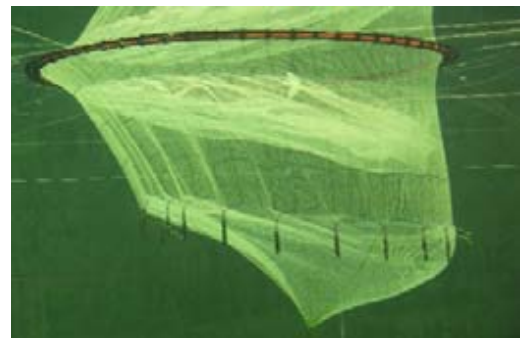
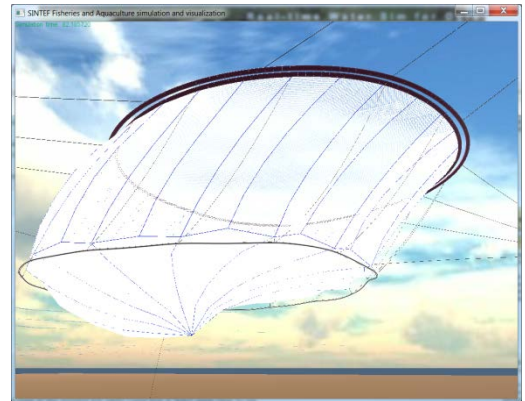
Project alternative 1

SINTEF contact: Stefan Arenfeldt Vilsen (Stefan.Vilsen@sintef.no)

Purpose: Aquaculture net cages for salmon breeding are being moved to from near shore to offshore exposed locations. The complex flow around net and cable structures limits simulation solutions, and structural validation must be done through model scale testing. Due the large geometrical extends of the system and size limitations at laboratory facilities, correct scaling of the system is not possible. Ongoing activities at SINTEF seek to develop hybrid test concept, derived from the Hardware in the Loop (HiL) test method typically used for component testing in the Aerospace and Automotive industries, where physical and numerical subsystems interact in real-time through sensors and actuators. The MSc project will be incorporated as a part of this project, activities will focus on developing and implementing a hybrid test system of a mooring line, experiments for validation of concept will be performed in the SINTEF driven flume tank in Hirtshals.

Main activities:

- Development of numerical cable model for application to real-time loop.
 - Numerical modelling
 - Structural dynamics
 - Hydrodynamics
- Implementation of numerical model in actuator control system
 - Coupled dynamic system
 - Control system synthesis
 - Observer design
- Model testing in laboratory
 - System setup and validation
 - Noise and time delay measurements



Project alternative 2: Design, construction and implementation of a measuring system for analysis of flow in a flume tank.

SINTEF contact: Kurt Hansen (Kurt.Hansen@sintef.no)

Purpose and relevance: SINTEF Fisheries and Aquaculture has installed a wave maker in the institute's flume tank in Hirtshals. This wave maker has a great influence on the quality of the flow in the tank. The institute has an interest in development of a system which can measure the speed of the water in a number of locations in the tank simultaneously.

Main activities:

- Selection or design of sensors for point measurements.
- Design and construction of a frame for 4-6 of the above sensors.
- Development of application for logging of current speeds.
- Verification of measuring system in flume tank.

