

Aquaculture structures
Callas 70
Congratulations !

Are Johan Berstad - President Aquastructures

PHD student with Callas as supervisor 1994-1998



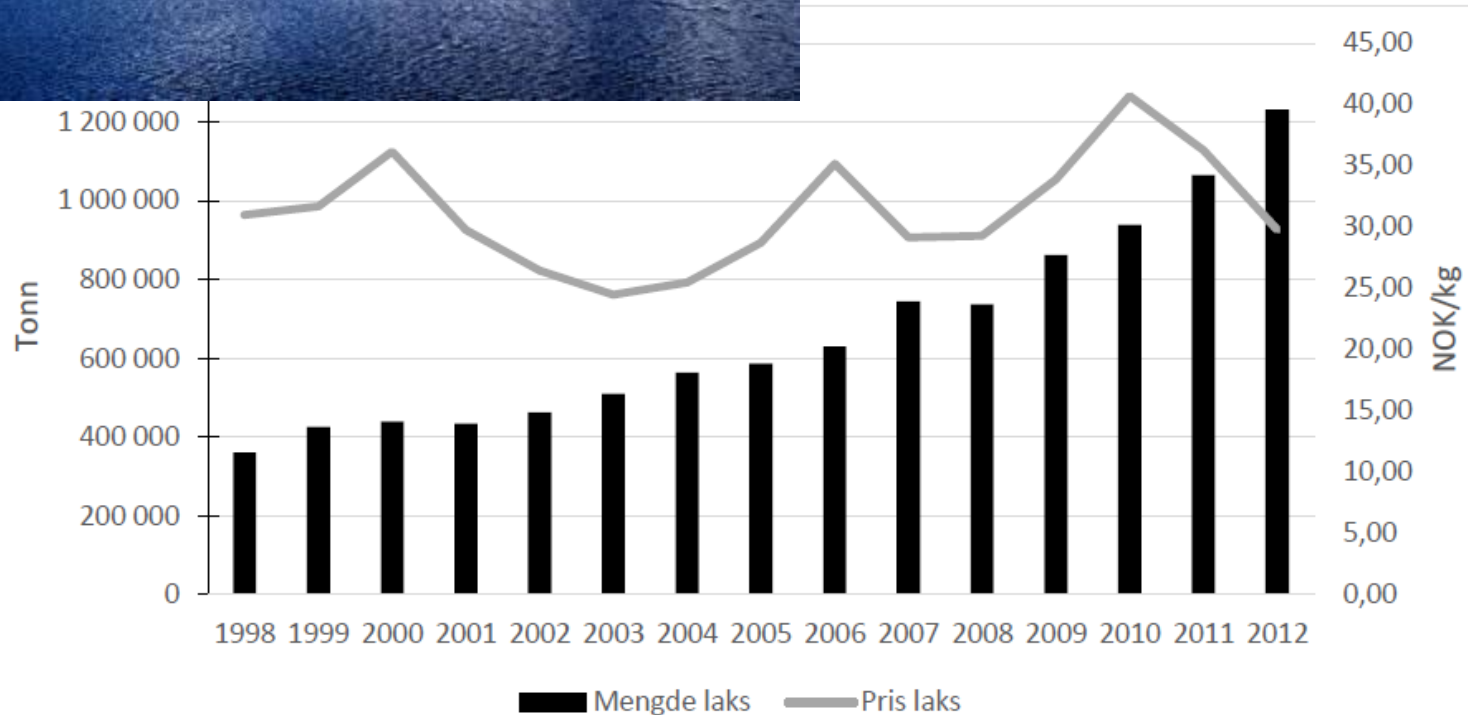
Now I am reading
this book with I
person an ex Phd
student

I alle mine triste ungdomsår var Huysmans en følgesvenn, en trofast venn; aldri opplevde jeg tvil, aldri var jeg fristet til å gi opp eller se meg om etter et annet emne; så en ettermiddag i juni 2007, etter å ha ventet lenge, etter å ha nølt så lenge som, eller endog litt lenger enn, tillatelig, disputerte jeg ved universitetet Paris IV – Sorbonne med min doktoravhandling: *Joris-Karl Huysmans eller enden av tunnelen*. Allerede neste morgen (eller kanskje allerede samme kveld, det kan jeg ikke si for sikkert, kvelden etter disputasen var ensom, og sterkt alkoholisert) forsto jeg at det var en del av livet mitt som var forbi, og at det sannsynligvis var den beste delen.

The Aquaculture industry in Norway



Started out with entrepreneurship along the Norwegian coast from the 1960' and evolved steadily.



Regulations/criteria in fish farming Norway

- In 2003 Rules and criteria was introduced to the Norwegian aquaculture industry
 - NYTEK – Forskrift (law)
 - NS 9415 – Standard (technical criteria)
 - System based on certification
 - Must have specified certificates by accredited body.
- Revision 2009 valid now where the following is the regime:
- Anleggssertifikat (INSP accreditation)
- Accredited mooring analysis (INSP accreditation)
- Produktsertifikat (PROD accreditation)
 - Design appraisal
 - Production traceability (own certificate)
 - User instructions (brukerhåndbok)
- Criteria NS 9415
 - 50 year return period storms
 - Capacity control
 - What about operations?

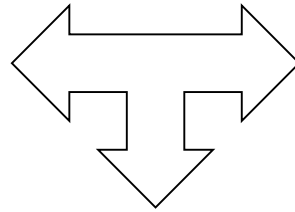
Aquastructures

- 2002 Aquastructures was established
 - Structural analysis and design verification
 - Vision «Safety through technology»
- Development of AquaSim since 2002
 - Several papers (2004-2015)
 - Comparison to model experiments
 - Supporting approx. 20 companies
- Certification body according to NS 9415 (accredited)
 - NS 9415 from 2003
 - Certification and inspection with ROV
- Head office in Trondheim
 - Offices in Oslo, Rørvik, Bergen, Alta
 - 16 employees



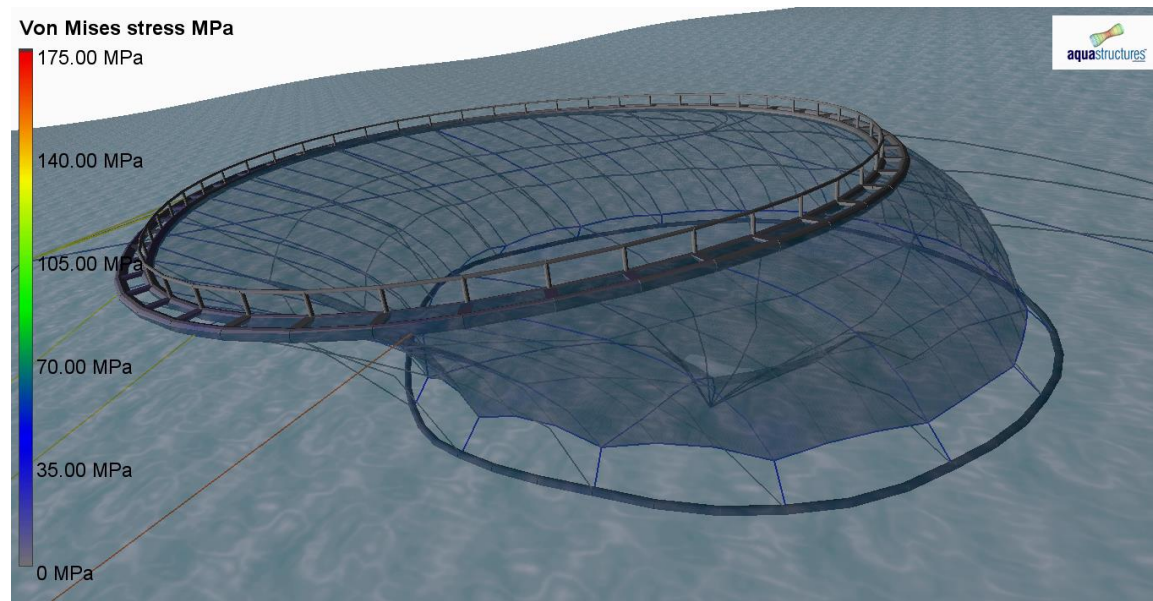
AquaSim

Hydrodynamic



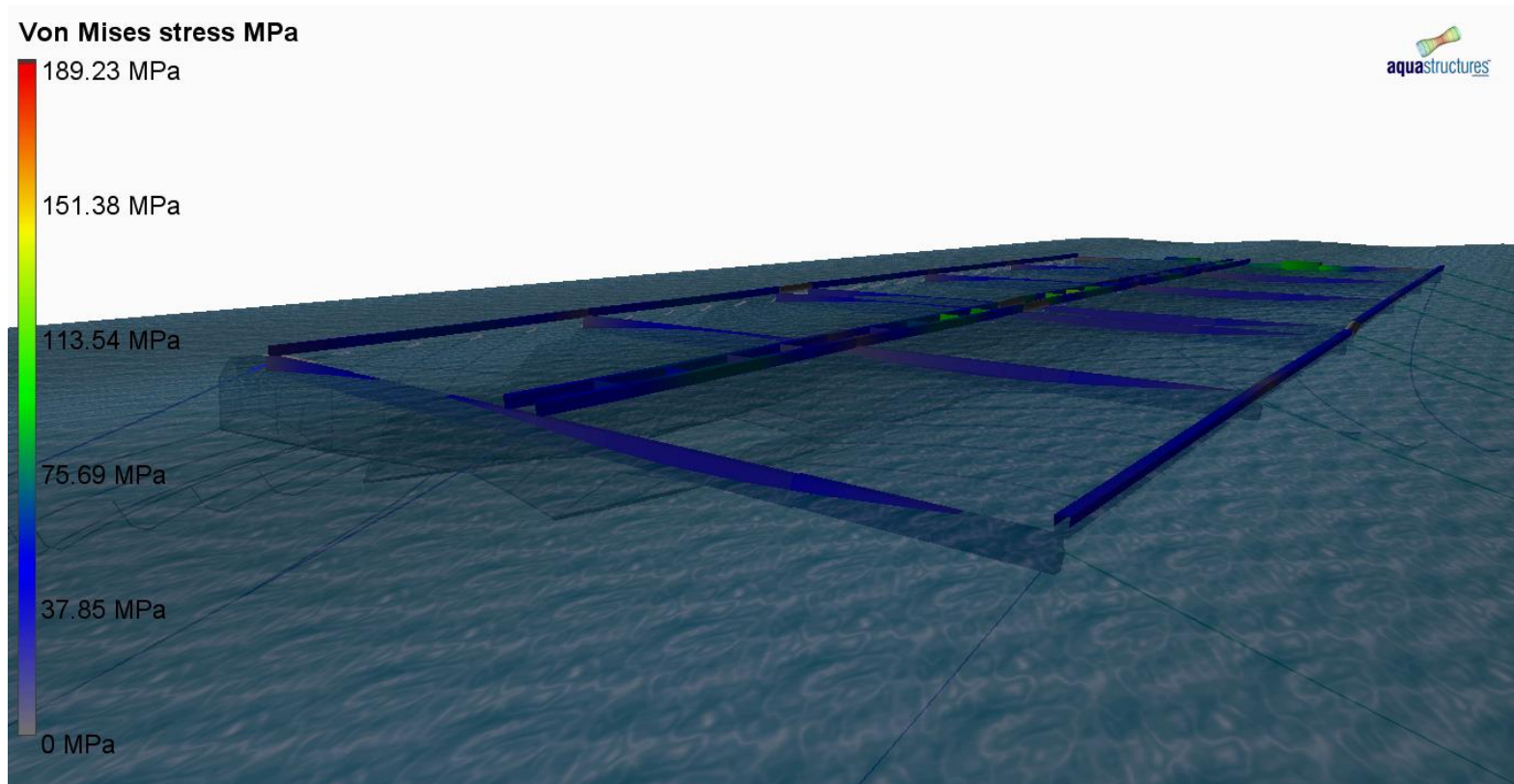
Finite element
analysis

Hydroelasticity

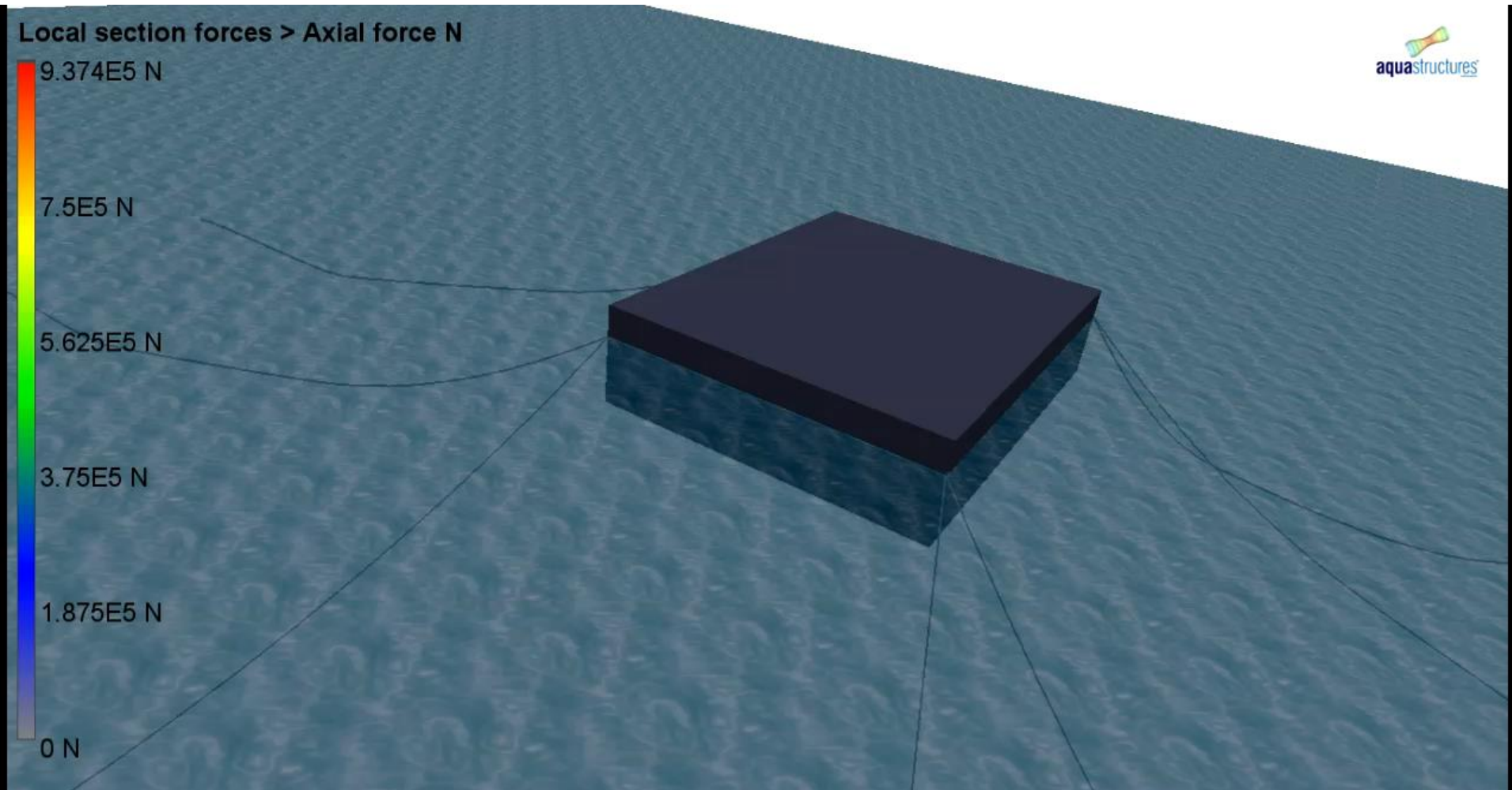


Understanding of flexibility, from where else than Callas?

Steel cage

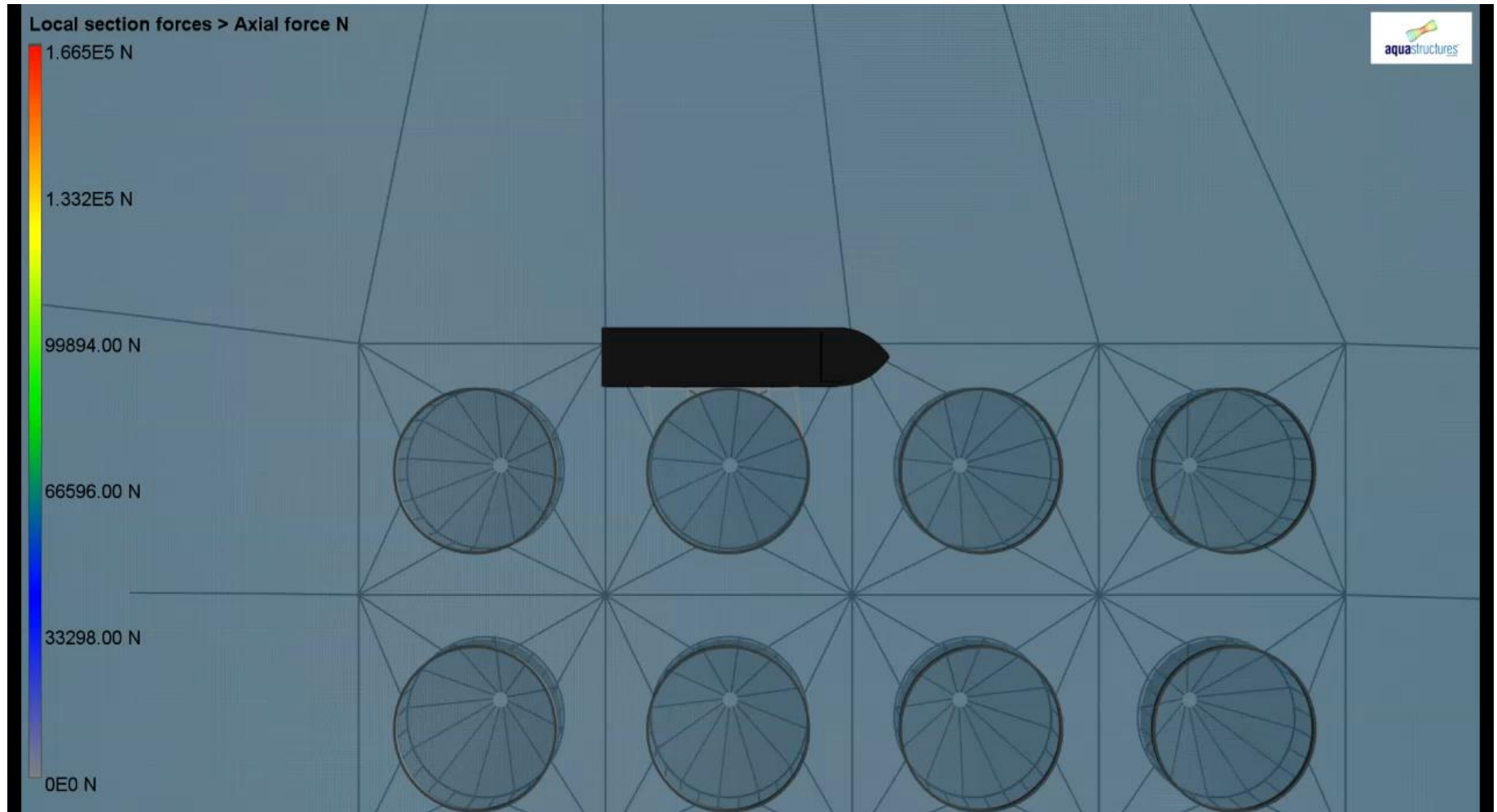


Fish feed, barges



Operations in the aquaculture industry

- Going under the «radar» as of today
- Outnumbers storms for fish escapes



Novel technology, impermeable nets

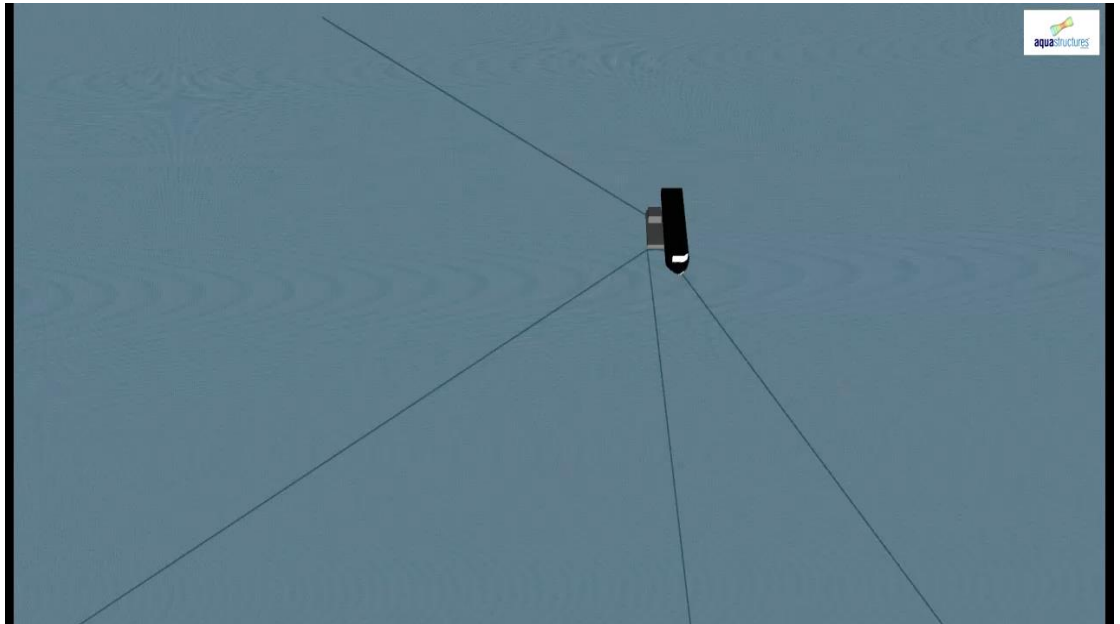
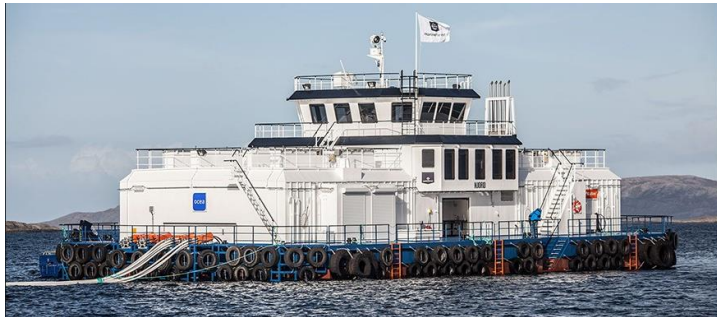
Loads caused by a fish carrier ship

- Comparison of two cases:
 - Case 1: Loads calculated by criteria in a normal mooring analysis (according to standard NS 9415).
 - Case 2: Fish carrier boat moored into fish farm components.



Feed barges

- Feed barges: Used for storage as well as as housing for workers.
- Mooring analyses with same environmental loads as for fish farms.



The I persons conclusion about his institute

Universitetsstudier i humanistiske fag fører som alle vet til nærmest ingenting, bortsett fra for de flinkeste studentene som kan gjøre karriere som universitetslærere i humanistiske fag – vi har kort oppsummert den ganske snodige situasjon der et system ikke har noe annet siktemål enn å reproducere seg selv, med en tilhørende grad av svinn på over 95 %. Disse studiene er imidlertid ikke skadelige, og kan til og med ha en marginal nytteverdi. En ung jente som søker jobb som ekspeditrise hos Céline eller Hermès, må naturligvis først og fremst pleie sitt utseende, men en bachelor eller en master i moder

Closure

- I want to thank you, Callas for having the opportunity to do my PHD and believe it is fair to conclude the following:
 1. I would say that the commercial “waste” for your students must be close to 0%.
 2. Doing my PHD was a really exiting period I look back upon with a real pleasure, but have also had exiting times since which I think is due to 1.
- Listening today, if you personify “the best way to prepare for the future is to create it”
- Thanks for having this, and the invitation and once again congratulations!