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Research Vessel – Faroe Marine Research Institute

Leon Smith, Head of Tech. Dept.

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Topics

- Institute & RV,tasks
- Project timeline
- New Vessel, particulars
  - Trawl pull
  - Silent-R
  - DP
  - Acoustic equipment
  - Environmental equipment
  - Fisheries biology measurement
  - Deck area
  - Spacing & Comfort
- Building process
- Questions

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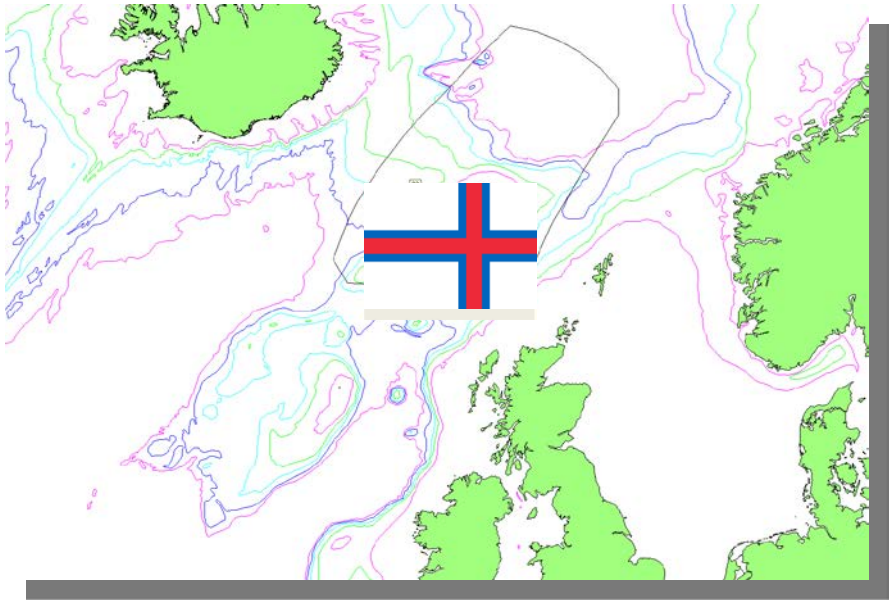
Faroe Islands (EEZ)



Self governing province of the Kingdom of Denmark. Not an EU member. And by that own trade/fisheries policies.

50750 souls (rising)
70000 sheeps
TW: 1399 sq. km.
EEZ: 260995 sq. km

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Faroe Marine Research Institute

- 30 staff (2½ tech.)
- Oceanography
- Geochemistry, plankton,nekton
- Ecosystems
- Seabirds
- Fish biology, stock assessment
- Ecosystem research
- Gear technology
- Advice

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Research Vessel

RV Magnus Heinason (1978)

- Length 45.5 m
- 13 crew/5 scientific staff
- Equipment
  - Pelagic and bottom trawls
  - Plankton nets
  - Echosounders EK60(38,(120),200)
  - Sonar
  - CTD with fluorometer

  PAR-sensor and O_2-sensor
  - Computer network, etc...

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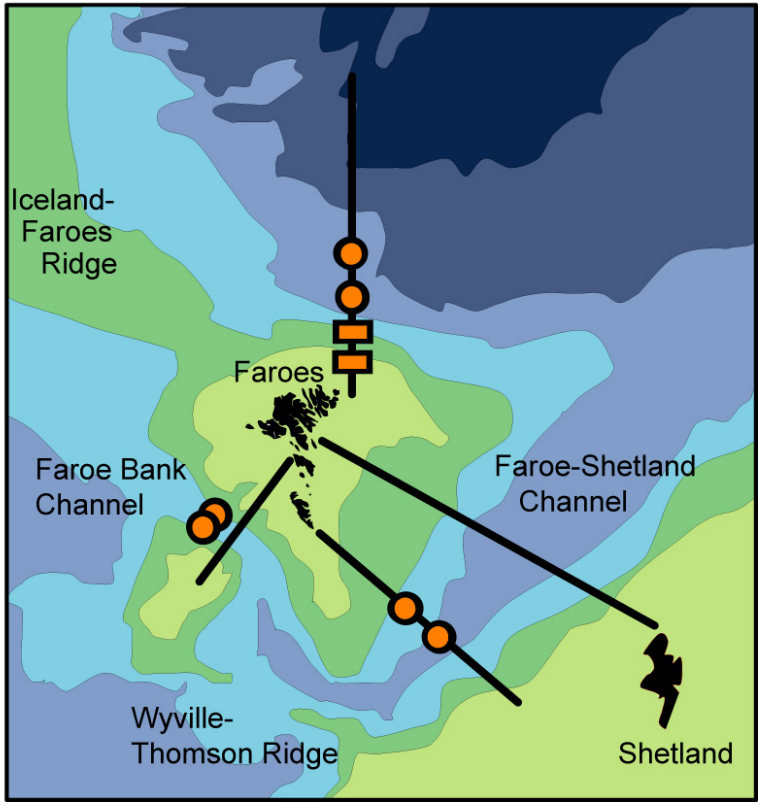
Hydrography

Ocean climate monitoring around the Faroe Islands



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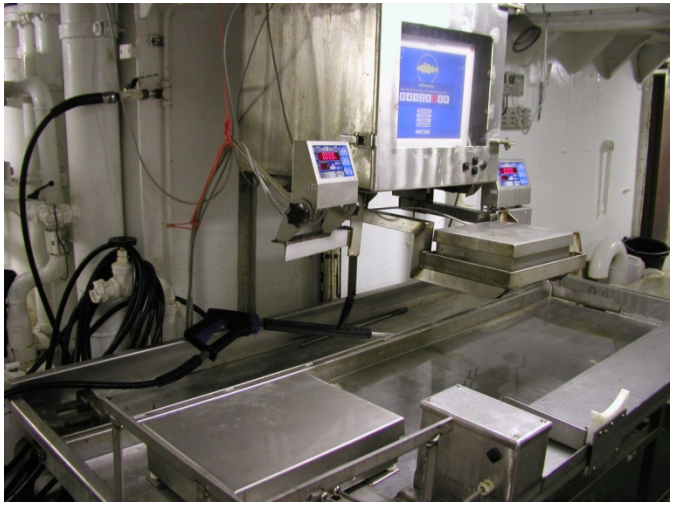
Demersals

- Cod, Haddock, Saithe,redfish and turbots mainly, but new law requires advice for all commercially exploited species.

- Trawl surveys spring and autumn



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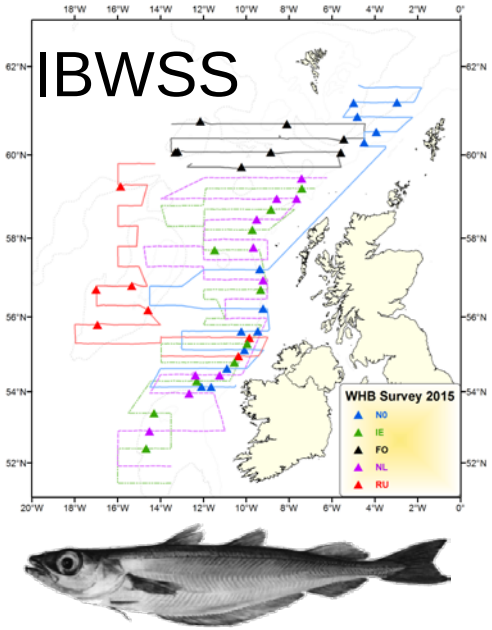
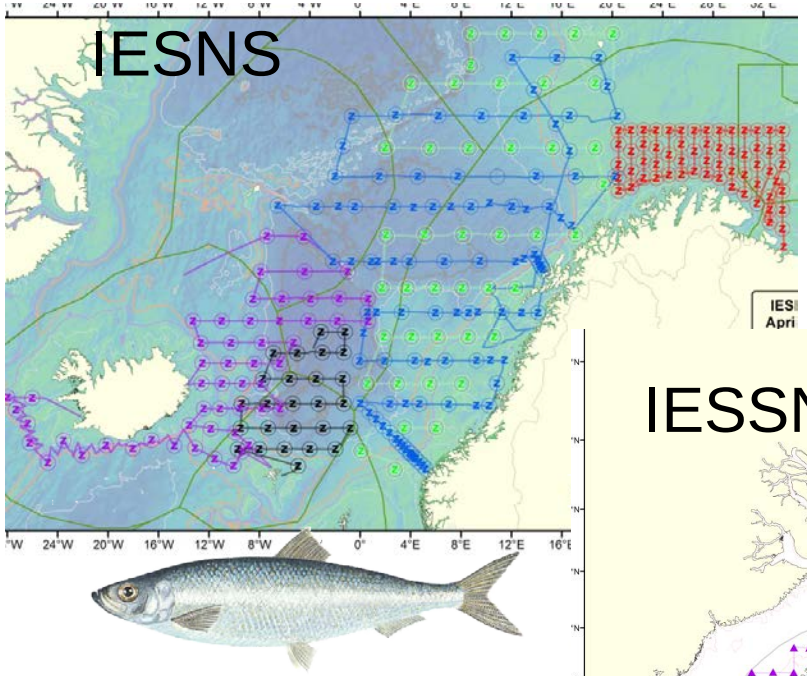
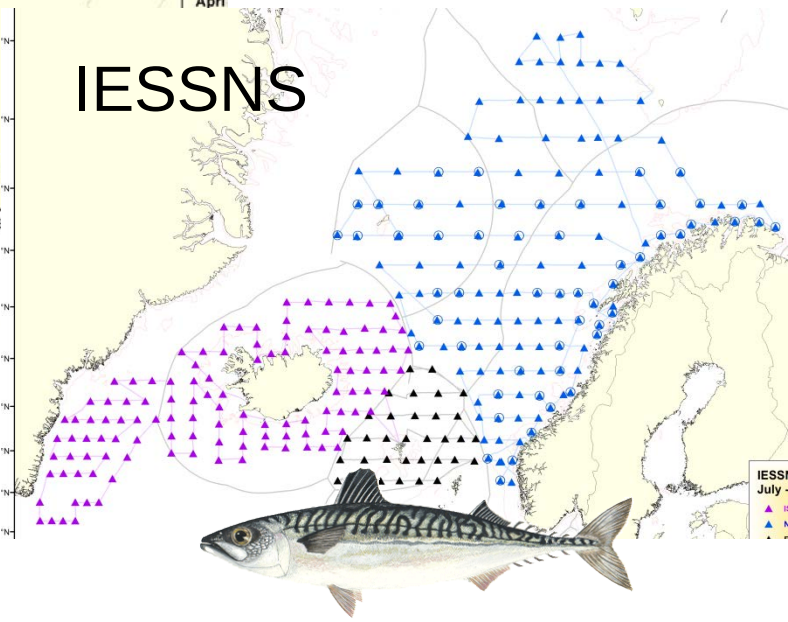
Oceanic international collaborative surveys since early 1990's:

Pelagic fish & environment







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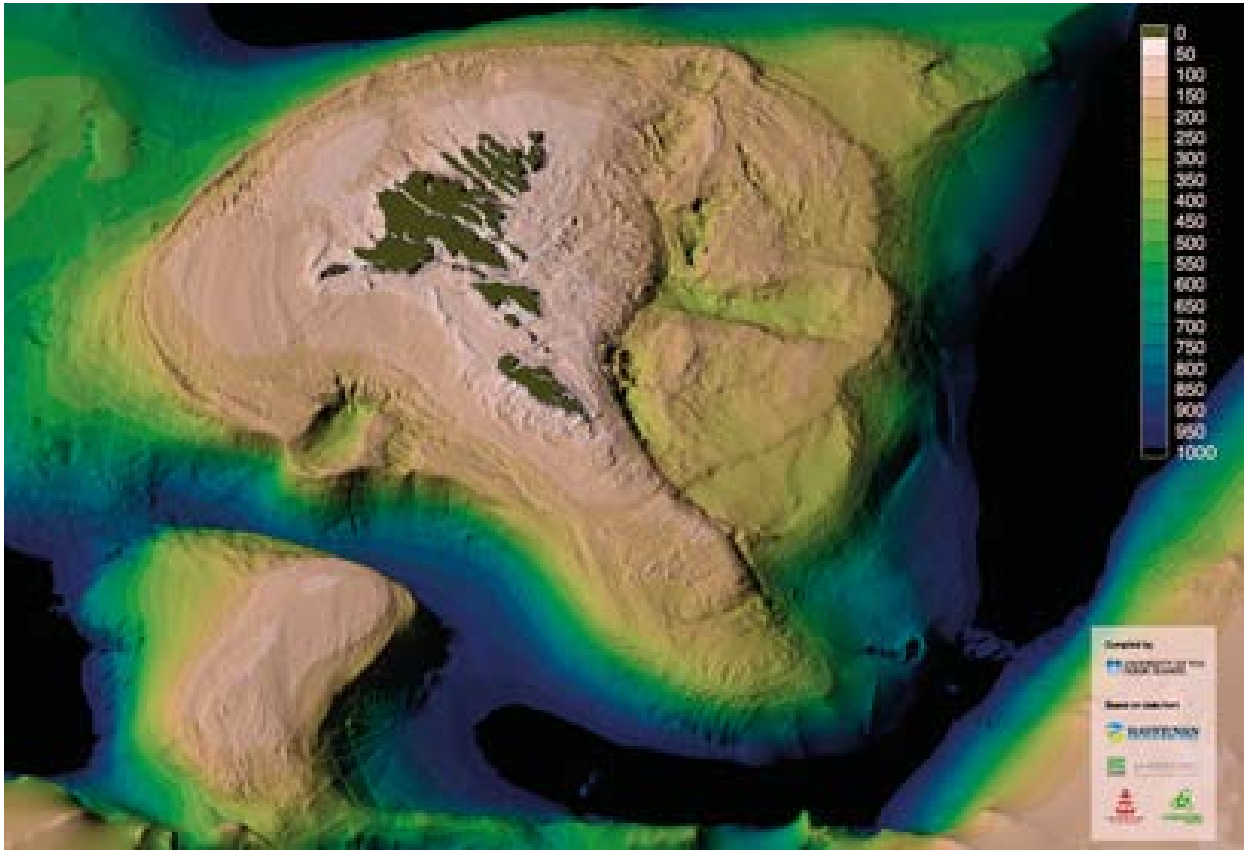
Mapping



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Project time line

- Main Specs. 2008

- Running cost (crew, fuel consumption)
- ICES 209 (URN)
- Work areas (MH as ref.)
- Dynamic Positioning
- Seismic surveys
- Modern workplace.

- Timeline
  - 2007 WG Havstovan.
  - 2008 T. Jacobsen, statement.
  - 2009 Pilot project finished.
  - 2011 Construction law.
  - 2012 Tender documents ready
  - 2016 Revised Tender docs,Tender,construction law (prolonged time).
  - 2017 Construction law (new costprice)
  - 2017 Contract MEST shipyard.
  - 2020 Delivery.

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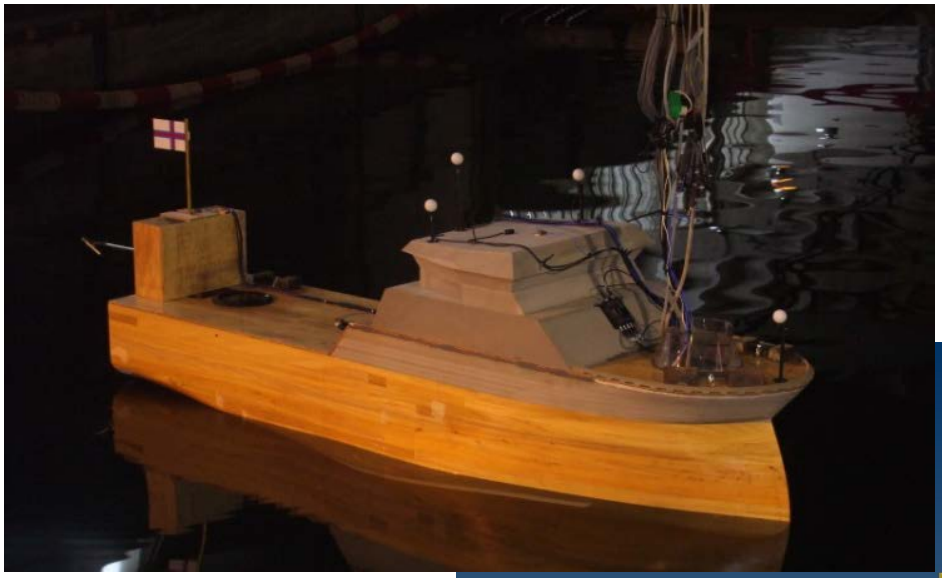
2009: Model testing



2012 design:

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2017 design

Main Specs. 2018

L 54 m B 13.6 m
Silent-R
Drop keel
Dynamic positioning
13 crew/12 researchers
Speed 11 knots/14 knots.

Main changes since 2008:
Length & beam, propulsion, accomodation, Emission control, ICES209 --> Silent R and design.

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Design approach?

- Running costs proportional with shipsize.
- Characteristics of a modern research vessel acc. to international norms.

Challenge for designers/yard:

To construct an oceangoing research vessel as good as the newest research vessels around, but smaller.

Olivur Holm:All vessels are to small!

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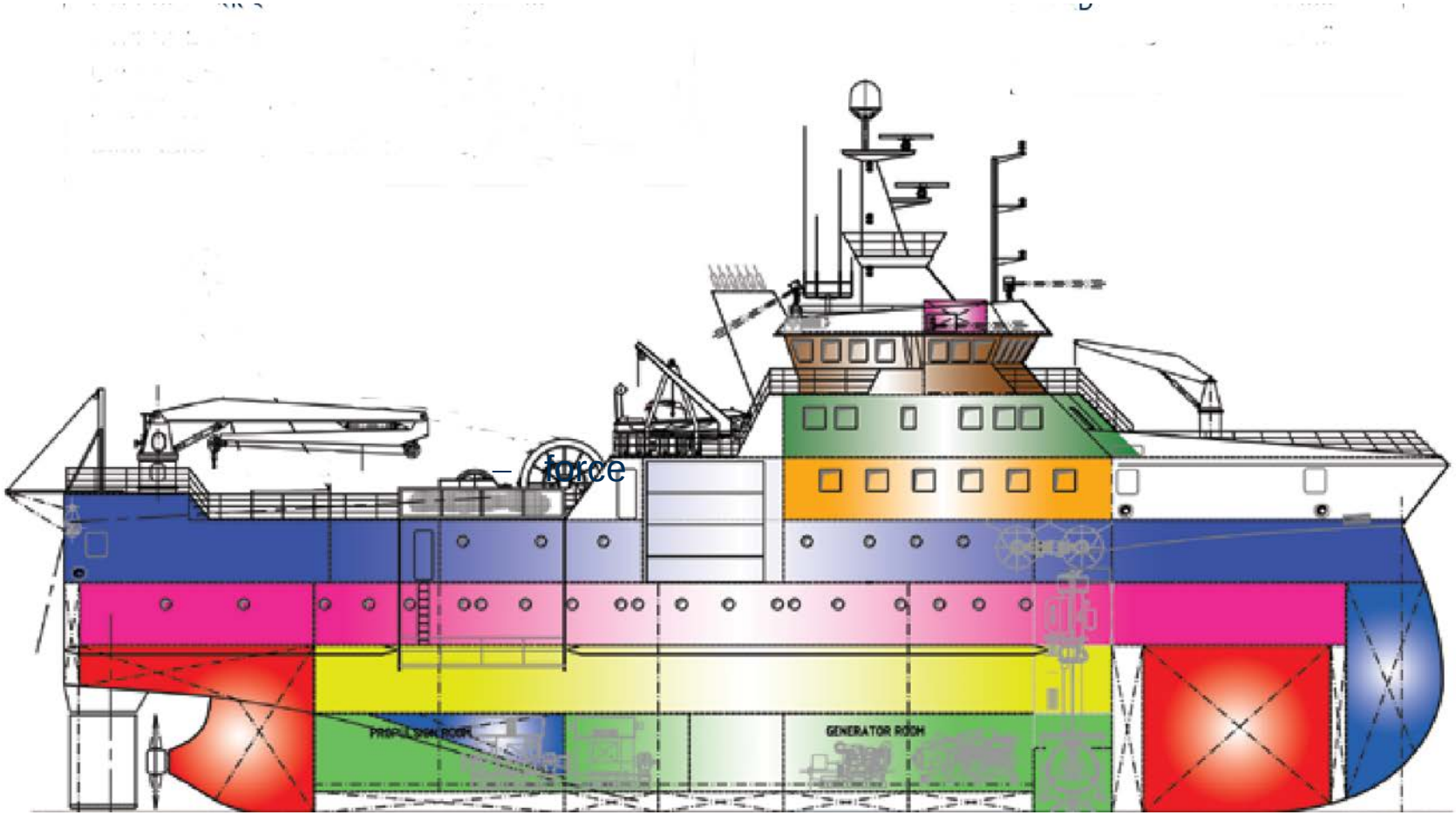
Design solution



2009 layout

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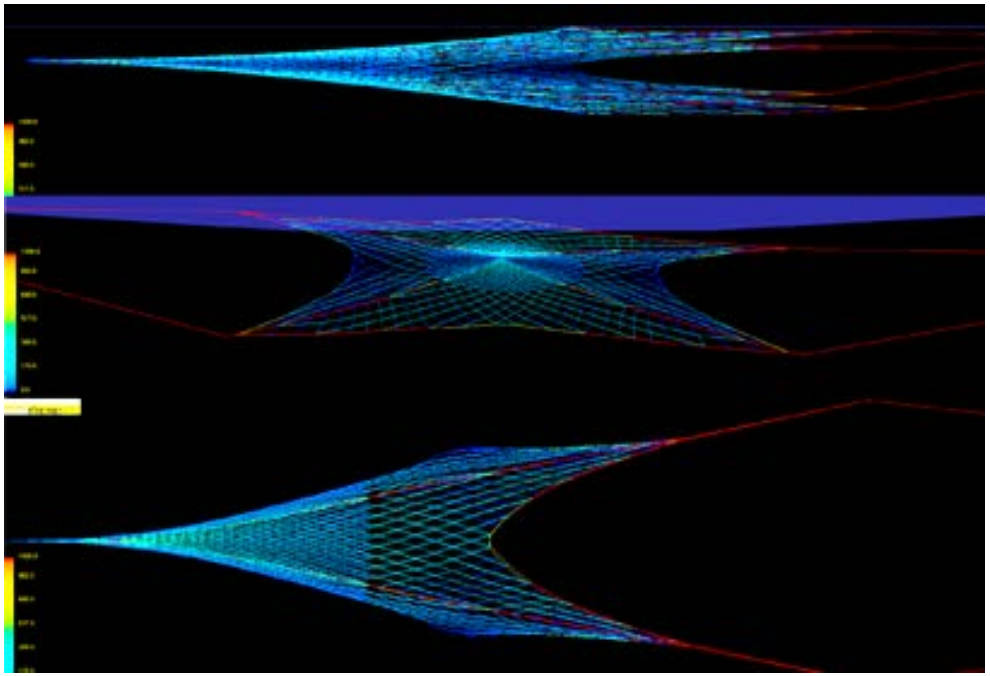
Trawl pull



Minimum requirement:
MULPELT 832 pelagic trawl resistance 22 T at 5 knots.

- Vessel modeltest shows 28 T/5 knots

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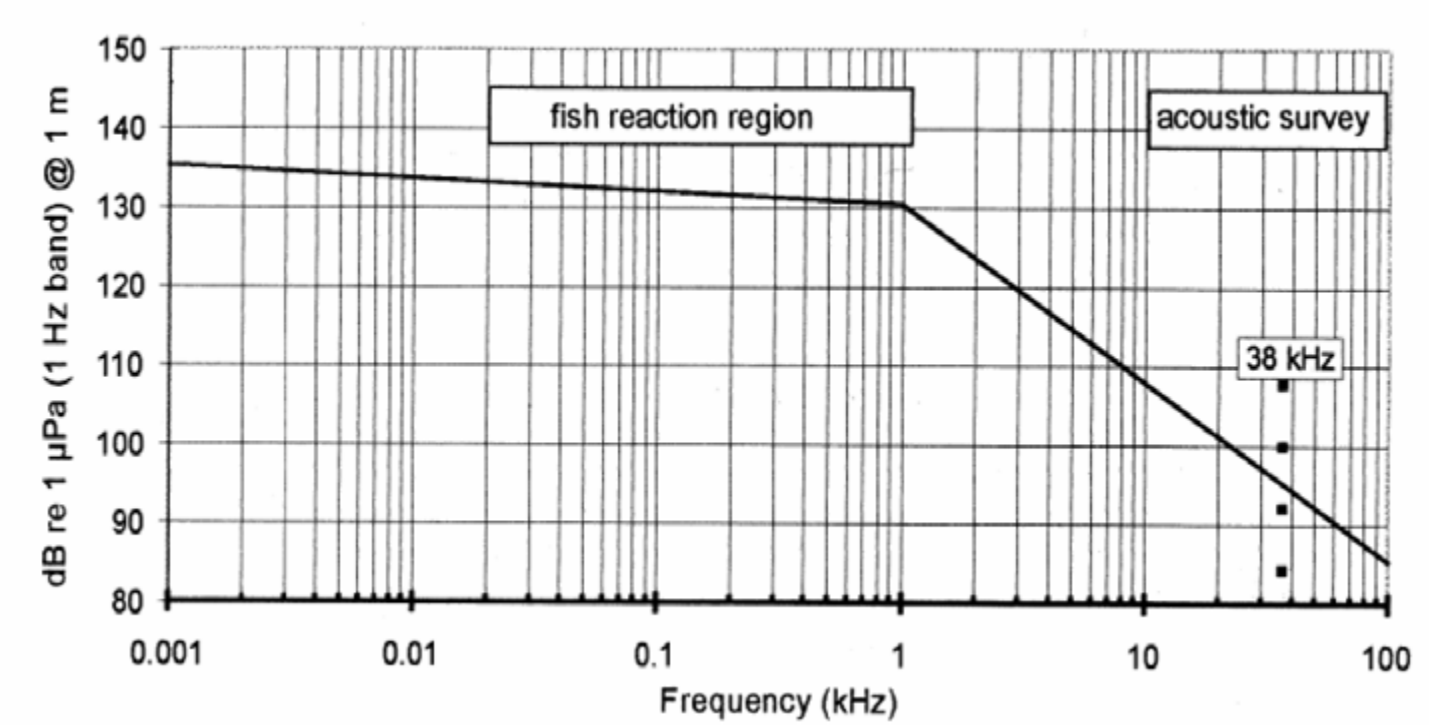
ICES209



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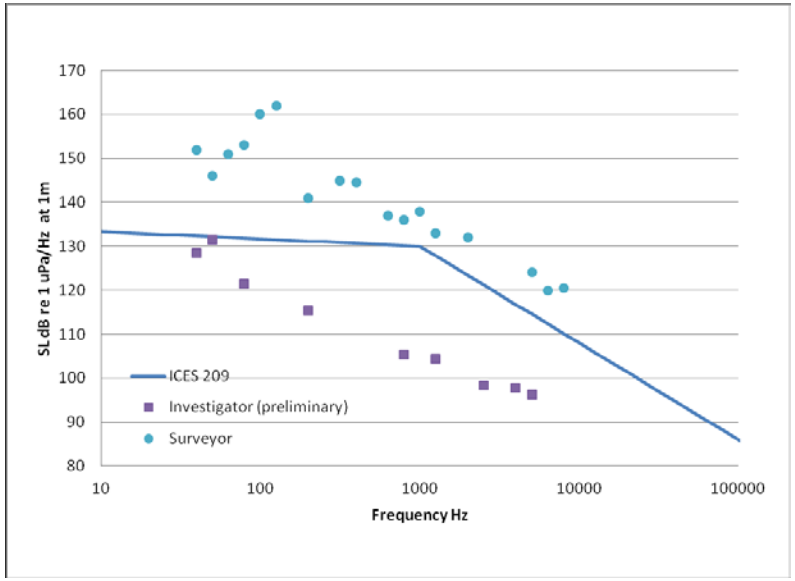
Silent R

From conventional trawler to Ultra Silent Research vessel.



Main Noise sources:

- Propeller/Nozzle
- Gear
- Propulsion Machinery

Solution:

- Fixed pitch propeller
- No gear
- Double resilient mounted machinery.

20 dB less noise (factor 100 in linear domain). Reference: Characterising the acoustic footprint of Australia's new research vessel RV Investigator, Rudy KLOSER,Tara MARTIN, Matt SHERLOCK

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Dynamic Positioning (DP)

800 kW azimut providing 360° force vectors in combination with propeller/rudder. (-->120°)

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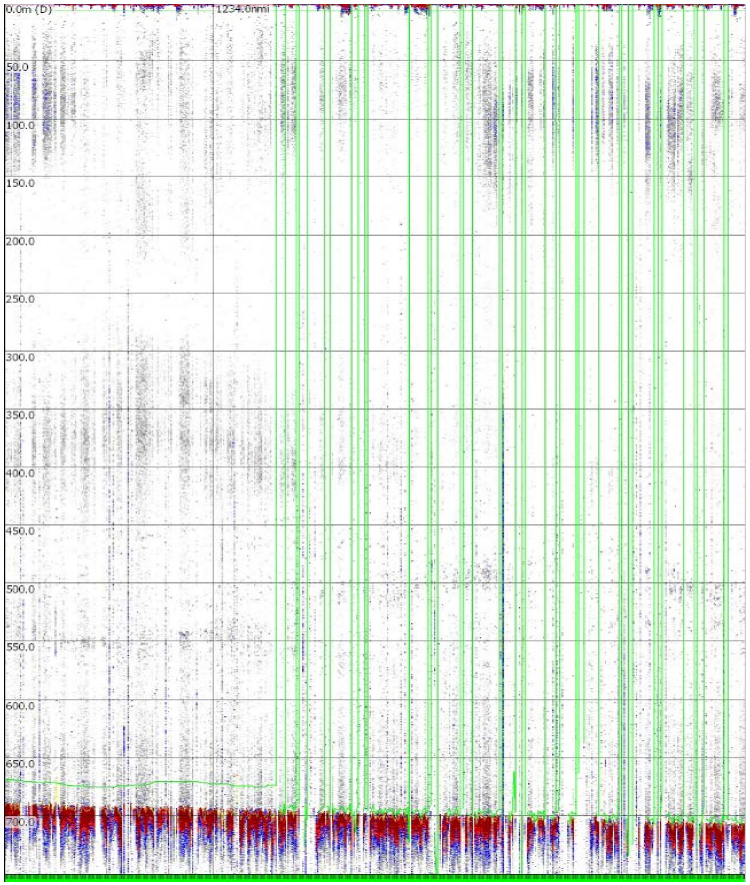
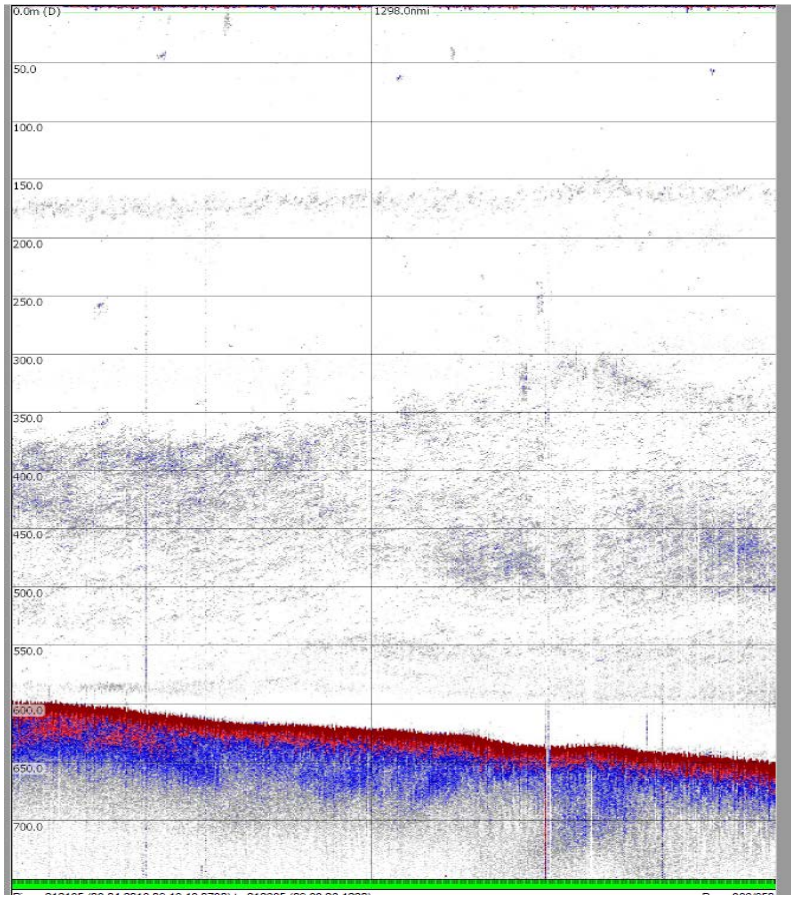
Acoustics, dropkeel





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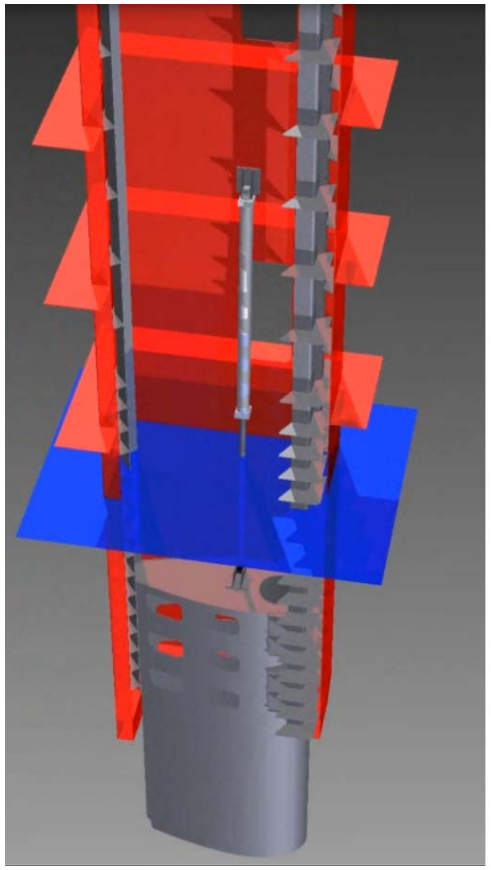
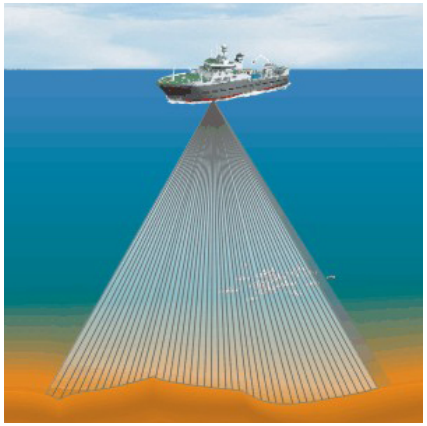
Dropkeel, equipment



Simrad EK80
18,38,70,120,200, 333 kHz

Simrad ME70 multibeam



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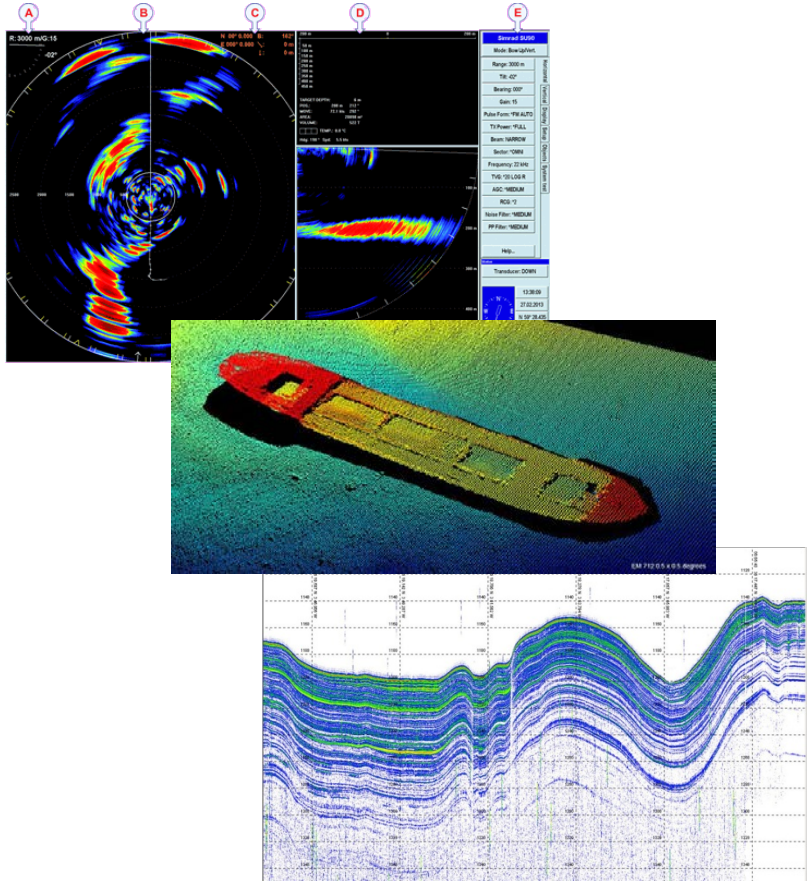
Additional acoustics

2 sonars: SU90 (20-30kHz) og CS90 (85kHz)

EM712 multibeam bathymetry

TOPAS18: Seismic echosounder

ADCP75 kHz



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Environmental equipment

Sea-Bird CTD, Vertical temp, oxygen, fluorescense
Thermosalinograph, Horisontal temp, oxygen,fluorescense
Planktonnets (WP2 etc)
Chelsea FastOcean APD system
Scanfish Rocio
Optical plankton recorder
Meteorological station

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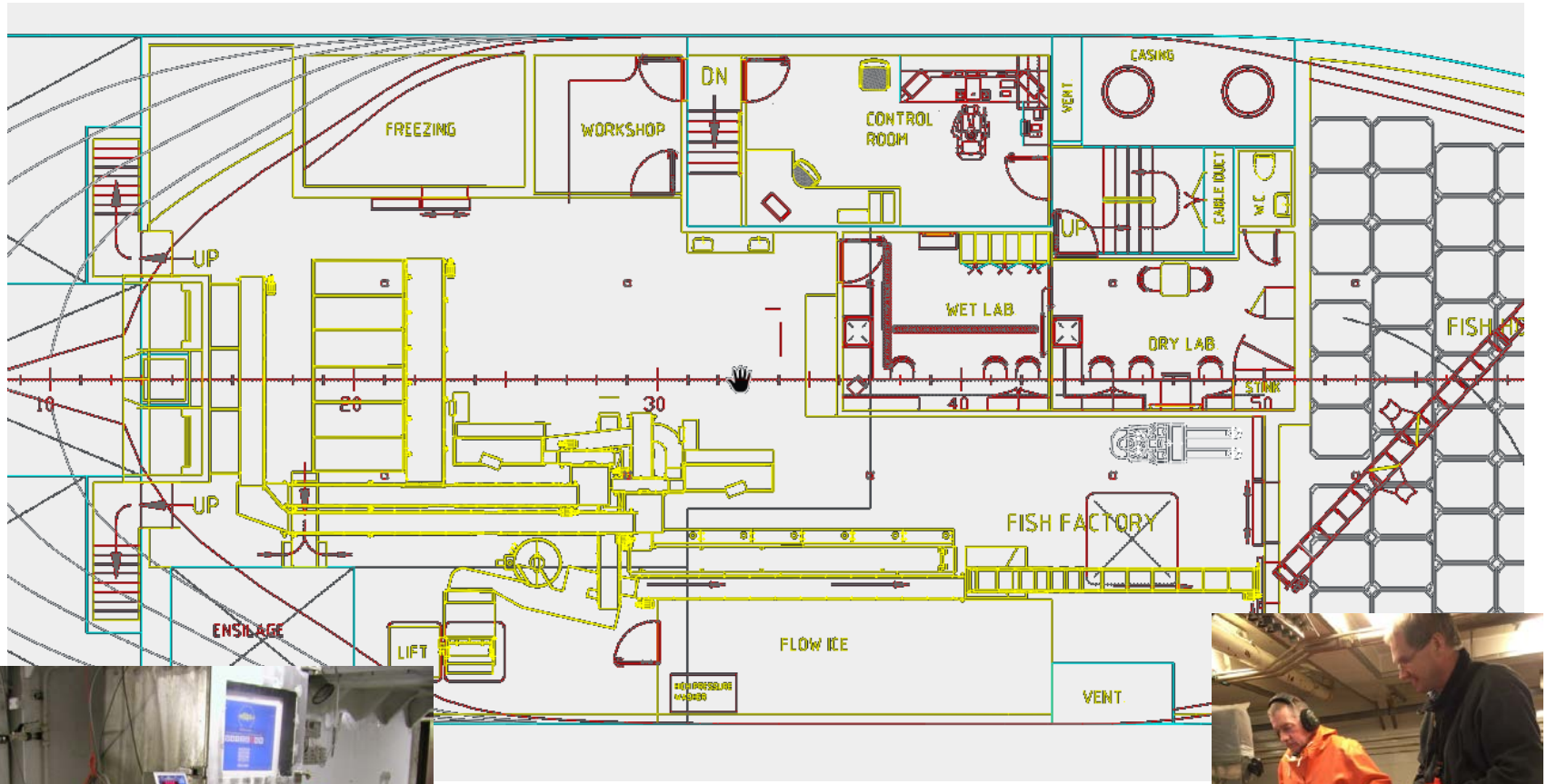
Fisheries biology



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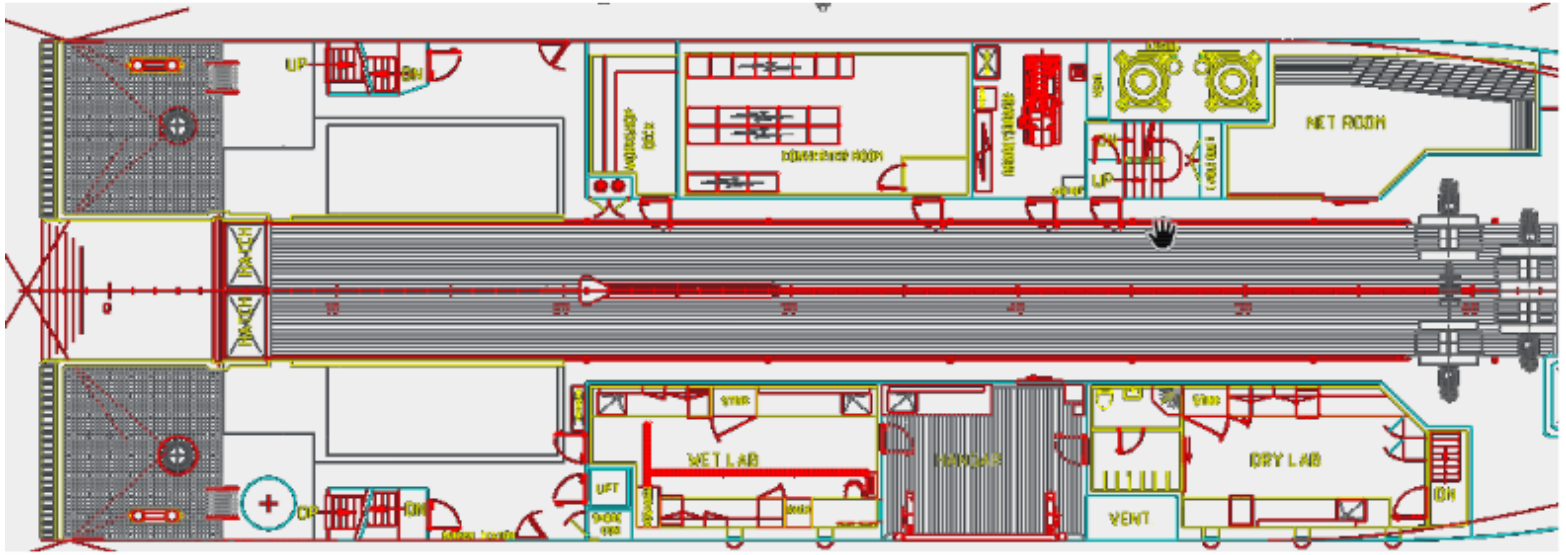
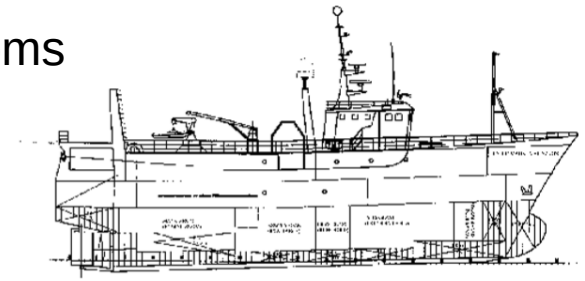
Trawl/hydr/other ops.



Comfort crew

Space: 3 times the deck area of MH

Comfortable messroom, recreational rooms

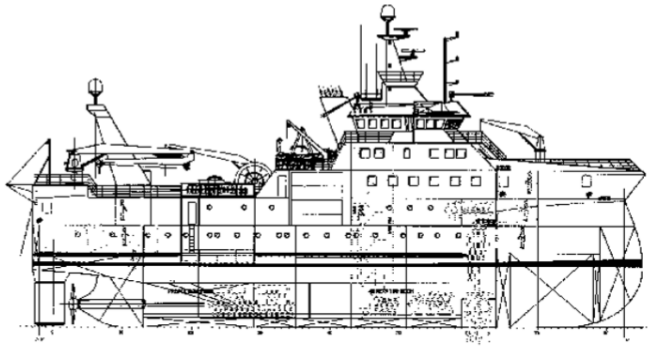


4 labs 2 wet and 2 dry

Workout room

Meeting rooms

Ships office



Single cabin crew

Double cabins researchers
Etc.

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Building process

Contract Yard P/F MEST, Tórshavn Faroe Islands

Construction starts Aug./Sept. 2018 (WBS, Klaipéda, Lithuania).
Hull finished by medio 2019.
Hull transport to Skála, Faroe Islands.
Hull Fitting 2019-2020.
Delivery medio 2020.

Questions?