SØLVTRANS

Biosecurity and transportation of fish
19.08.2019

# SØLVTRANS

***#1 global operator***

***17 vessels***
***5 newbuilds***

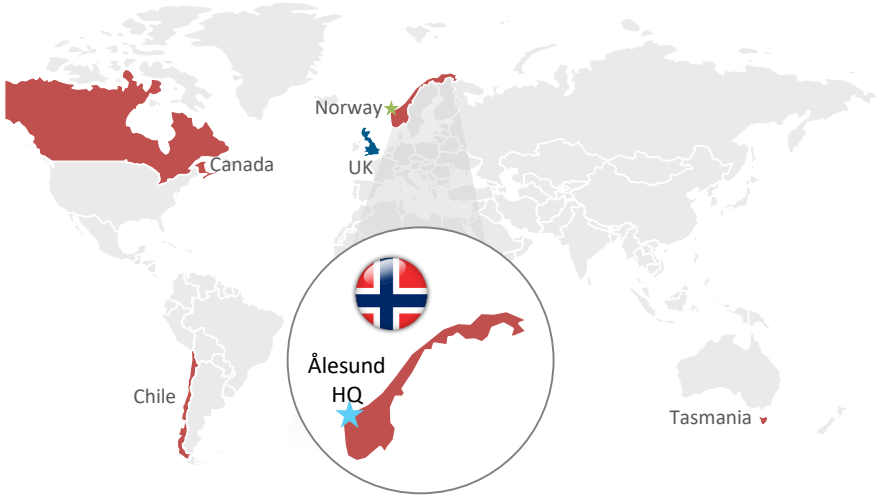
***Founded in 1986***

***~300 FTE's***

## Overview

- The global leader in live fish logistics for the aquaculture industry
- State of the art fleet consisting of 17 vessels, with 5 additional vessels in the pipeline
- International operations in all key salmon farming markets. Europe, Tasmania, Canada and Chile
- Headquartered in Ålesund (Norway) and has approximately 300 employees
- Sølvtrans AS owns 48 % of the Chilean company Sølvtrans Chile SA (Presented by general manager Victor Vargas later)

## Geographic footprint



# SØLVTRANS HISTORY

**2017**
Newbuilds Oystrand (3600m3) and Ronja Ocean (3200m3) and Ronia Diamond (3200m3) delivered respectively January, March and September.

**2015 - December**
Acquires Bømlo Brønnbåtservice to become the globally leading wellboat operator

**2014**
Oaktree Capital Management purchases majority of shares in **July 2014** and Sølvtrans is de-listed from Oslo Axess. Enters the Australian market.

**Going forward**
4 newbuilds to be delivered in 2019, among them the worlds largest nominated for «Ship of the year 2019». Recently contracted a new build for 2020 and a new build for 2021

**2016**
2 New long term charter contracts in UK for our newbuilds Ronja Challenger and Ronja Supporter. The company is celebrating 30 – years.

**2007**
Re-enters the Norwegian market through the acquisition of Frøyfisk

**2010**
Sølvtrans Holding AS listed on Oslo Axess through an IPO on **13 March 2010**, enters the Canadian market

**1986**
"Sølv Trans" was established and the first vessel was a rebuilt freighter named "Sølv Trans"

**1998-2005**
Main portion of operations were moved to Scotland in 1998, several wellboats added to the fleet during 2001-2003

**1996**
First new vessel Ronja Fisk, which was the company's first purpose built vessel for live fish handling

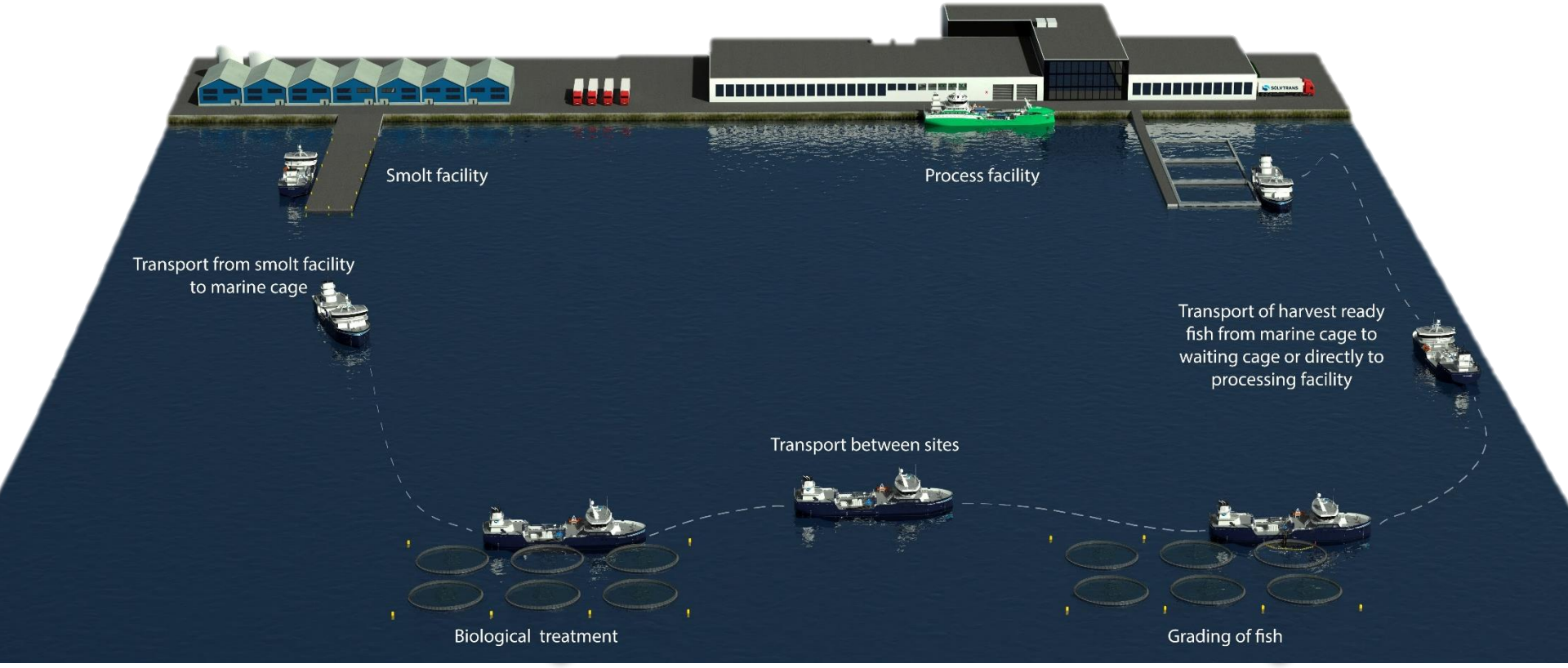
# LIVE FISH LOGISTIC CHAIN

10 – 16 months

14 – 24 months

| Broodstock / genetics | Growth phase onshore (smolt) | Transfer to sea | Growth phase at sea | Harvest | Primary / secondary processing |
|---|---|---|---|---|---|
| *Eggs* | *0-250g* | | *250g – 5kg* | *~4-5kg* | |

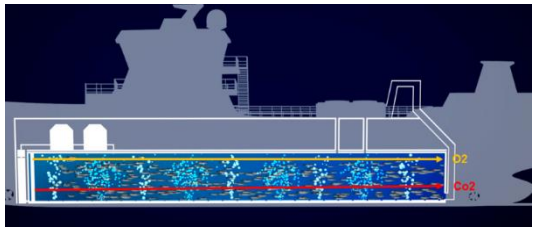
**Live fish logistics & handling is a core part of the salmon farming value chain**



# SØLVTRANS – LEADING THE WAY

**Closed system**

- Developed as a consequence of Scottish ISA in -98
- Reduces risks for disease spreading
- Gives a less responsive and stressed fish due to cooling with 1,5° per hour




**Delousing with H2O2**

- Method for environmentally friendly delousing developed in -09 together with MH
- Reduces the need of lice-medicine in the feed

**AGD freshwater treatment**

- Sølvtrans developed in 2014 a new cost-effective system for freshwater treatment against AGD
- The treatment water can be cleaned and reused a multiple number of times

**Going forward**

- Continuous development of the wellboat technology based on:
  - Operational improvements
  - Regulatory changes and customer demands
  - Improvements in fish welfare
  - Bio-security issues (PD / ILA)

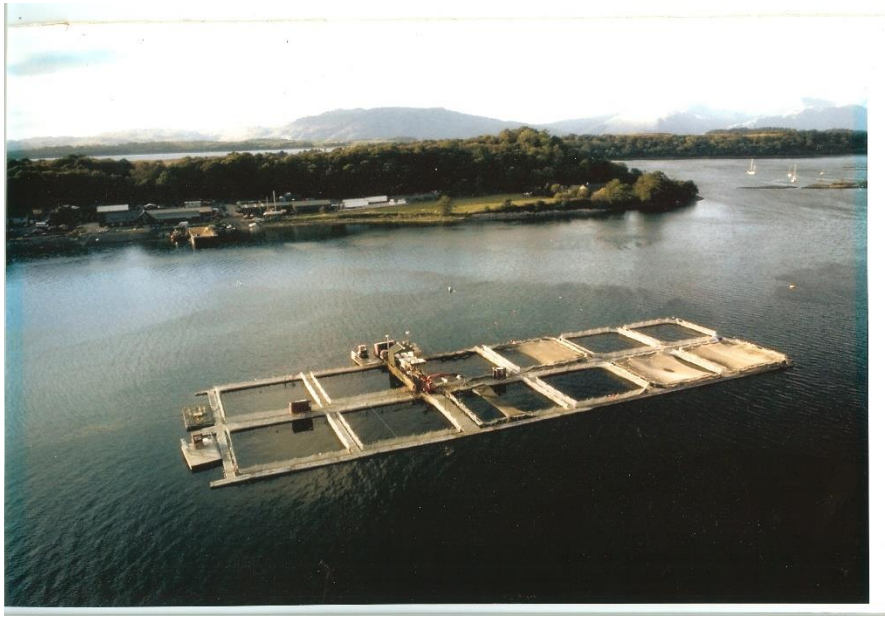
# FIRST WELLBOAT - 1986

# FIRST PURPOSE BUILT VESSELS

Ronja Fisk - 1996

Ronja Christopher - 1997

# ISA SCOTLAND 1998



South Shian harvest station pre ISA - Scotland

South Shian harvest station after ISA - Scotland

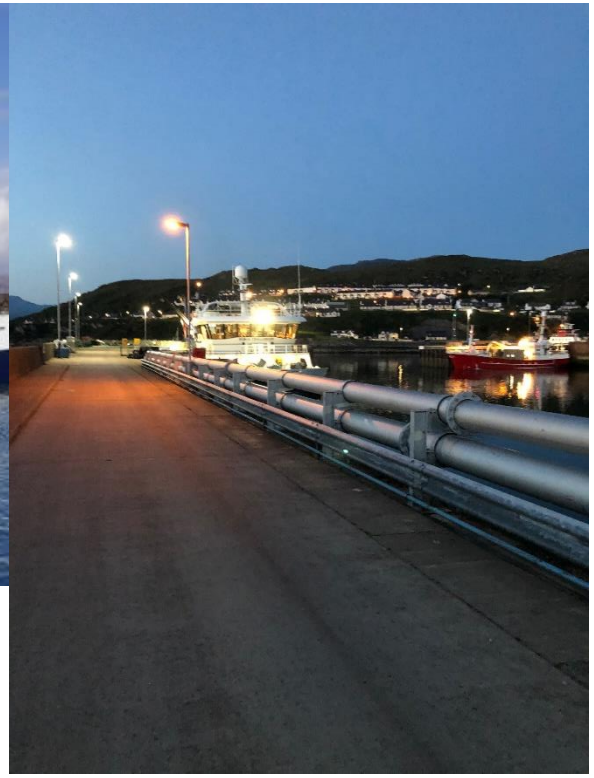
Existing wellboats were identified as a large biosecurity risk. The existing wellboats were moved out of scotland while the fish farming industry recovered.

- Closed valve transport when within 5 km of any fin fish farm site.
- Cleaning and disinfection procedures for wellboats – standard defined
- Biosecurity focus

➢ New Technology evolved

# ISA SCOTLAND 1998


Mallaig Harbour – pumping fish directly onshore. No harvest pens.



Existing wellboats were identified as a large biosecurity risk. The existing wellboats were moved out of scotland while the fish farming industry recovered.

- Closed valve transport when within 5 km of any fin fish farm site.
- Cleaning and disinfection procedures for wellboats – standard defined
- Biosecurity focus

➢ New Technology evolved

# CLOSED VALVE SYSTEM – NEW TECHNOLOGY

South Shian harvest station after ISA – Scotland
Ronja Skye (2001) – Closed valve system pumping fish directly onshore. No harvest pens.

Ronja Settler - 2002

Ronja Commander - 2003

# NORWAY - UV - SYSTEMS

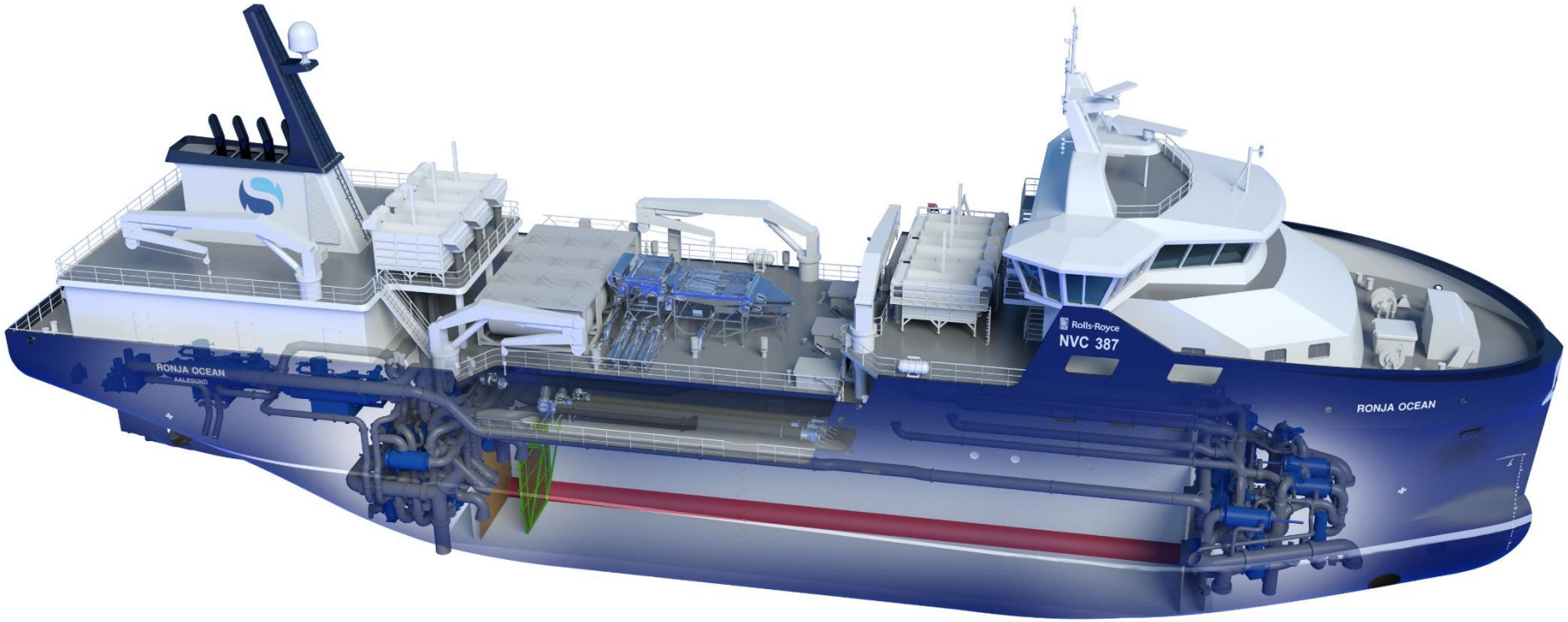
## Is UV safe enough for live fish transport?

UV was equal to closed valve system before 2018…

There are a few uncertainties regards to the UV systems:

- UV dose in controlled area (Lab) versus wellboat?
  - Minimum 25 mWs/cm2
- Pre-filtration 150 - 300 micron?
- Maintenance and durability?
- Documentation?

# NEW MODERN VESSELS



# FLEET OVERVIEW

## High focus on biosecurity and fish welfare

- Straight pipes for loading/unloading (Under – and overpressure)
- 20 inch loading/unloading pipes
- Water quality
  - Sensors to measure water quality parameters
  - CO2 airaition
  - Oxygen production
- Sideways circulation
  - Low velocity of water gives less stress for the fish
  - Pressure channel is washed and desinfected every day
  - Less pipes than longitudinal circulation
- RSW – Refrigirated seawater
- Open/closed valves are logged to secure 100% closed transport
- Filter
- Fuel efficient propulsion systems
- Reuse of water – Environmentally friendly and effective

# New building program

- The Ronja Storm – with Havyard:
  - When delivered in October 2019 she will be the world's largest wellboat
  - Tank capacity will be 7,450m$^3$, nearly double the size of a current wellboat and indicates the industry development towards larger vessels
- 3 wellboats 2,500 m$^3$ - Aas Mek
  - June 2019, Q4 2019 and Q4 2020
  - Suitable for most of the areas where we operate and for all kind of jobs
- 1800 m$^3$ - Aas Mek
  - To be delivered Q3 2019
- 4000 m$^3$ - Myklebust
  - To be delivered Q1 2021


# Thank you for your attention!

SÖLVTRANS

# Sølvtrans Chile SA


Seminar on fish health, 19th of August
Biosecurity and transportation of fish

SØLVTRANS

# Solvtrans Chile


- Solvtrans Chile S.A. was established in 2005.
- Today Solvtrans Chile operate 5 wellboats; 2 traditional - and 3 modern wellboats
- Around 100 full time employees
- We strongly believe that our service add value to our customer,
- Our facilities for the crew is one of the best inside the wellboat industry in Chile

# Ronia Austral (660 m3)


| | | |
|---|---|---|
| **Eslora** | | 40,00 m |
| **Manga** | | 10,00 m |
| **Calado** | | 5,00 m |
| **Andar pomedio** | | 10 nudos |
| **Año Construcción** | | 2003 |
| **Volumen de carga** | | 2 x 330 m3 **total 660 m³** |
| **Capacidad Carga** | | **Salmon; 90 tons - Trucha: 80 tons** |
| **Combustible** | 50 m³ | |
| **Agua Dulce** | | 15 m³ |
| **Thrusters** | | 2 x Brunnnvoll, 300kw. |
| **Tipo de navegación** | | Abierto / Semi – Cerrado |

SÓLVTRANS

# Ronia Pacific (660 m3)


| | | |
|---|---|---|
| **Eslora** | | 40,00 m |
| **Manga** | | 10,00 m |
| **Calado** | | 5,00 m |
| **Andar pomedio** | | 10 nudos |
| **Año Construcción** | | 2003 |
| **Volumen de carga** | | 2 x 330 m3 **total 660 m³** |
| **Capacidad Carga** | | **Salmon; 90 tons - Trucha: 80 tons** |
| **Combustible** | 50 m³ | |
| **Agua Dulce** | | 15 m³ |
| **Thrusters** | | 2 x Brunnnvoll, 300kw. |
| **Tipo de navegación** | | Abierto / Semi – Cerrado |

SÓLVTRANS

# Ronia Atlantic

| | | |
|---|---|---|
| **Eslora** | | 68,00 m |
| **Manga** | | 14,00 m |
| **Calado** | | 6,30 m |
| **Andar pomedio** | | 11 nudos |
| **Año Construcción** | | 2009 |
| **Volumen de carga** | | 2 x 570m3 + 1 x 800m3 **total 1.950 m³** |
| **Capacidad Carga** | | **Salmon; 300 tons - Trucha: 280 tons** |
| **Combustible** | 120 m³ | |
| **Agua Dulce** | | 97 m³ |
| **Thrusters** | | 2 x Brunnnvoll, 300kw. + 500kw. |
| **Tipo de navegación** | | Abierto / Semi – Cerrado / Cerrado |

# Ronia Pioneer

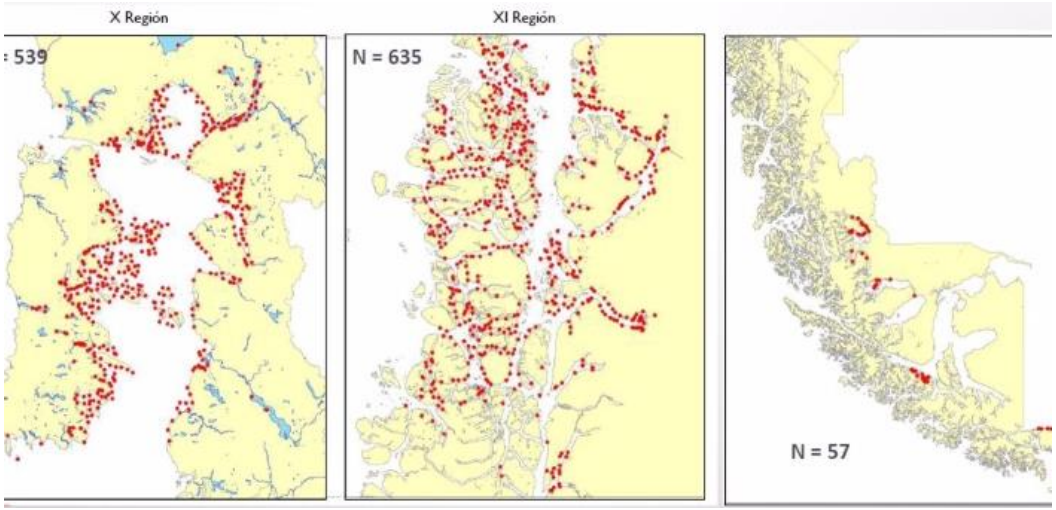
| | | |
|---|---|---|
| **Eslora** | | 51,00 m |
| **Manga** | | 12,00 m |
| **Calado** | | 5,00 m |
| **Andar pomedio** | | 11 nudos |
| **Año Construcción** | | 2006 |
| **Volumen de carga** | | 2 x 550m3 **total 1.100 m³** |
| **Capacidad Carga** | | **Salmon; 165 tons - Trucha: 138 tons** |
| **Combustible** | 160 m³ | |
| **Agua Dulce** | | 50 m³ |
| **Thrusters** | | 2 x Brunnnvoll, 300kw |
| **Tipo de navegación** | | Abierto / Semi – Cerrado / Cerrado |

# Ronia Diamond

| | | |
|---|---|---|
| **Eslora** | | 80,00 m |
| **Manga** | | 18,00 m |
| **Calado** | | 7,00 m |
| **Andar pomedio** | | 12 nudos |
| **Año Construcción** | | 2017 |
| **Volumen de carga** | | 2x 1050m3 + 1 x 1100m3 **total 3.200 m³** |
| **Capacidad Carga** | | **Salmon; 500 tons - Trucha: 400 tons** |
| **Combustible** | 250 m³ | |
| **Agua Dulce** | | 160 m³ |
| **Thrusters** | | 2 x Brunnnvoll, 630kw. |
| **Tipo de navegación** | | Abierto / Semi – Cerrado / Cerrado |

# Salmon Map

- The wellboats sail mainly from north to south.
- The distance between Pto Montt and Pta. Arenas is ca. 1000 nautical miles.
- Round trip for sailing will take around 9 days with average speed of 10 knots.
- Average distance in region X is ca.  100 nautical mile.
- The distance from Pto Mott to Pto. Chacabuco in the XI is ca. 270 nautical miles, almost 3 days to do the round trip.

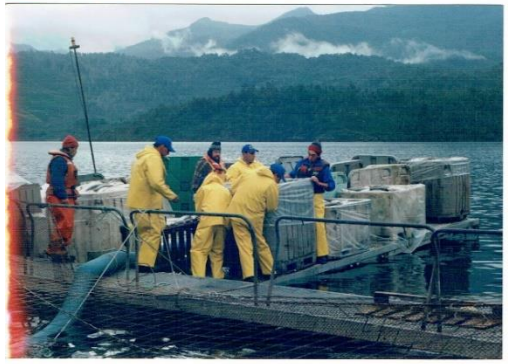




SOLVTRANS

# First transports - harvesting

- ✓ In the start the harvesting of the fishes was done on site. The fish was placed in boxes that was transported on barges to the processing factory.
- ✓ No technology was used.
- ✓ The biosecurity was not focus
- ✓ The regulations were not good and the farmes focused mainly on growing the fish.



SÖLVTRANS

# First wellboats

- ❑ The first wellboat appeared in the start of the year 2000.

- ✓ Start of live fish transports
- ✓ Simple technology, loading and unloading by Vaccum pumps
- ✓ Easy long way circulation with O2 injection trough…..
- ✓ Avarage capacity of 450m3, around 50 tons of live fish.
- ✓ Every ship owner and farmer decided standard of biosecurity regards to wash and desinfection.
- ✓ Biosecurity regulations were not good.



SØLVTRANS

# Converted Fishing vessels

- ❑ Rebuilt fishing vessels for live fish transport began around 2005.

- ✓ Bad results in terms of the final quality and biosecurity..
- ✓ High level of mortalities.
- ✓ Expensive operations.
- ✓ Complicated to maneuver.
- ✓ High impact on the environment
- ✓ Restricted only to harvest

- ✓ Technology was very simple, loading and unloading by Vaccum pumps.
- ✓ Inefficient O2 systems.
- ✓ Inefficient water circulation..
- ✓ Avarage capacity of 700m3,
- ✓ The regulation approved open transportation

SÓLVTRANS

# Wellboat after ISA Crisis

- Until 2012 the total wellboat fleet had an aprox. capacity of 25.000m3
- Today the capacity of the chilean wellboat fleet is more than 50.000m3.
- Differents type of vessels has been designed.
- Most of the fleet are still converted fishing vessel. Some of the wellboats was built in Chile, another in China and several imported from Norway.
- Improved regulations regards to biosecurity since 2012. The food authority forbid open transport with live fish.
- New regulation approved semi-open (UV) and closed system.
- New regulations requires to treat all the water in and out for smolt transportation and out for harvesting fish.
- The chilean fleet use UV treatment system to treat the water.
- The minimun UV dose is 90 MJ/cm2.


# Smolt Transportation

- The smolt in Chile are transported mainly in another type of vessels, “Smolt Boat”.
- Some of the wellboats do smolt transportation.
- The smolt boat has an avarage capacity of 350m3.
- The smolt boats are equiped with several fiber glass tank on deck, with O2 injection by O2 bottles and monitoring system.


# Challenges

- The industry will need more crew with wellboat expertise.
- Most of the wellboat can sail close just some hours.
- Sea Lice strategi – Sea lice need to be captured and not put back to the sea.
- Algae Blom.
- Most of the wellboat still unloading the fishes to the waiting cages, using air presure that creates high level of stress.
- Moving Bulkhead is used just for some wellboats. This minimize stress.
- Just some wellboats can discharge directly to the killing station.
- Most of the wellboat fleet, 90%, is concentrated to transport only harvesting fish.
- Just some wellboat has the technical solution to do smolt transportation, sea lice and AGD  treatment, grading, etc.
- Theres is a few wellboat treating ballast wáter, this is very important to protect the enviroment and reduce the risk of algae contamination.

# Solvtrans Chile Goals

- To be a long term partner for the salmon farmers. Assist our customers not only with wellboat services.
- Handle the fish gentle
- Minimize enviromental impact
- Continue develop new tehcnologies to generate more value to our services.
- Crew training and education.
- Work together with the authorities to find better solution inside the wellboat industry.
- Participate with community in different social projects.


# GRACIAS POR SU ATENCIÓN!!!

Yesterday….

Today….


Tomorrow….


SØLVTRANS