



OUR WELLBOATS AND OTHER VESSELS

- Wellboats have wells or tanks for the storage and transport of live fish. The term was first used in the 17th century and before modern refrigeration methods, well-boats allowed for the delivery of live fish to port. Contemporary wellboats are used extensively in the aquaculture industry around the world.
- **Huron was the first company globally to use a wellboat for the purpose of bathing fish** in freshwater.
- Wellboats are not on-water fish processing factories so they do not discharge processing waste into the water.
- Wellboats eliminate the need for time intensive, noisy towing of pens back and forth through Tasmanian waterways. Wellboats also provide a much safer working environment for employees, particularly as Huron grows its off-shore farming.
- We use our wellboats to transport smolt to sea, to transfer them from farm sites to harvest pens and to bathe them. The *Ronja Storm*, Huron's second wellboat, arrived in February 2020 joining Huron's first wellboat (first in Tasmania), the *Ronja Huon*.
- The *Ronja Storm* is the largest wellboat in the world currently in operation, both in terms of ship size and water holding capacity; at 116 metres long and 23 metres wide. An on-board desalination plant can produce 700,000 litres of freshwater every hour, minimising our use of Tasmania's freshwater resource.
- Huron's vessel portfolio comprises of 85 boats working on waters throughout our marine farming areas in Tasmania's south and west coasts.

THE RONJA HUON

The *Ronja Huon* was the first vessel of her type to be used in aquaculture operations in Australia. She began operating in December 2014 and has been a key component in the success of our off-shore farming.

Constructed to Huron's exact specifications, the *Ronja Huon* has enabled the company to safely service more exposed sites in Storm Bay as well as eliminate the towing of fresh water, and the large canvas liners required to supply this water, as well as the towing of pens to harvest.

At 75 metres long and 16 metres wide, with two Rolls Royce engines, she can count and weigh fish throughout the pumping process. Cameras are included in the pipes, de-waterers and the wells, she can exchange water at a rate of 30,000 tons per hour, and can chill 3,000 tonnes of water at the rate of three degrees in two hours. A siphon system transfers the fish through the pipes thereby reducing noise together with the diesel-electric power.



THE RONJA STORM

The *Ronja Storm* is a highly sophisticated wellboat designed to withstand the world's roughest salmon farming area, Storm Bay. She is the largest wellboat in the world currently in active operation both in terms of ship size and water holding capacity; at 116 metres long and 23 metres wide, she has a total water storage volume (including treatment tanks) of over 13,000 cubic metres (4 tanks @ 1780 m3) and holds 800 tonnes of fish at a time (equivalent to an entire 240 metre Fortress Pen).

Every well has 30 sensors installed which deliver constant, real-time monitoring data back to the bridge. Her well capacity is more than treble that of the *Ronja Huon* (which has 3 tanks @ 1,000 m3).

While the *Ronja Storm* will be able to work in more difficult conditions than the *Ronja Huon*, her large capacity and ability to produce freshwater on-board means it can do considerably more work when conditions are fine and easier for farm crews. This will also result in less vessel movements through the Channel.

Her innovative technology does not equate to reduced employment; in fact, we have employed additional staff; the same outcome occurred after the arrival of the first wellboat – our workforce prior to the arrival of the *Ronja Huon* was 467FTE (June 2014); post, it was 504FTE (June 2015). Our current workforce is 753FTE (June 2020).

The *Ronja Storm* is an investment into Huon's future into farming in Tasmania, and Australia as a whole. She enables expansion in offshore, more challenging farming environments, enables strengthened animal welfare and biosecurity practices.

THE STORM PARTICULARS

The ship was designed by Havyard Ship Design with significant input into the fish handling systems provided by both Solvtrans (ship builders) and Huon Aquaculture.

The hull, superstructure and large pipework was purpose-built at the Cemre shipyard in Turkey. The bare ship was then towed to Havyard's shipyard at Leirvik on Sognefjord in Norway for the comprehensive fit out. Sea trials were undertaken in late October followed by dry-docking where the hull was thoroughly pressure cleaned (including disinfection) in preparation for application of an additional anti-fouling paint (that only requires repainting every five years). Throughout this process an independent marine consultant assessed all steps.

She then made her way to Tasmania via the Canary Islands and the Panama Canal, travelling across the Pacific Ocean (with a refuel stop in Tahiti!). The hull was exposed to freshwater during the transit through the canal, which is a good biosecurity practice. Upon arrival in Hobart, a rigorous assessment against customs, biosecurity and immigration protocols was undertaken. As with any new vessel entering Australian waters, AMSA also conducted an initial inspection (organised by DNV-GL Norway, the Class Society responsible for undertaking the survey).

The *Ronja Storm* contains freshwater ballast (generated from RO) – upon arrival in Hobart the ballast water was certified by Federal Department of Environment, and any discharge is in accordance with the Commonwealth Biofouling Management Guidelines. The *Ronja Storm* has an adjustable live fish grader in the loading system that allows for removal of small fish which can be returned to sea.

The *Ronja Storm* is fitted with the latest power system which utilises multiple variable speed generators which adjust the number of units in operation as well as engine speed, to meet required power demand. This is achieved by generating power at 690VAC with variable frequency and converting it to DC inside the main switchboard, and transmitting it through the ship using 1,000VDC and 700VDC grids. Electrical power is then converted back to the required AC voltage by frequency converters which control electric motor speed. As a result, the system achieves a significant reduction in fuel consumption, and noise and exhaust emissions.

The power generation and propulsion system is designed to operate at a maximum sound pressure of 35 decibels (dB) which is a reduction of 90 per cent when compared to *Ronja Huon's* designed noise pressure



of 45dB (the Bel scale is logarithmic so an increase of 10dB increases sound pressure by 10 times, and increase of 20dB increases it by 100 times). To compare this with some common household white goods, the quietest dishwasher available produces 40dB and an average domestic refrigerator produces 45dB.

The technology is more robust than ever—this is the first time this type of offshore power management system has been fitted to a wellboat. She includes backup power systems that ensure a minimum of 50 per cent operations in case of system failure resulting in robust, secure fish welfare practices.

DESALINATION PLANT

The *Ronja Storm* has the capability to create freshwater from seawater via reverse osmosis through an on-water desalination plant (which can produce 16.8ML of freshwater per day; or over 200,000 average sized baths for humans). Water is taken into the vessel from the sea and turned into freshwater. In addition, the water can be used up to 12 times before being treated and returned to sea (while that is possible, our processes include an inspection of water quality after four uses).

Of each intake of sea water, 50 per cent is turned into freshwater for bathing and the other 50 per cent is cleaned (following filtration) and released back into the ocean with the additional salt and mineral content from the treated seawater. This water produced by reverse osmosis (RO) is of a higher quality than water from a freshwater river, meaning a greater density of fish is able to be treated at any given time. All water used in the RO process is filtered in a three-stage process down to a particle size of five microns.

Some people have expressed concern to us at the level of “pollutants” being discharged back into the sea from the desalination plant; the only pollutants returned to salt water is salt water, and sea water will always be returned to the same lease site.

The wellboats are skippered by extremely skilled Masters who have operated in a range of sea conditions across the world. There is a multitude of safety and operating measures they must adhere including speed, distance from shore

We often get questioned about operations travelling past Dennes Point, Bruny Island – wellboats travel in the middle of the water, approximately 700-800 metres from the Dennes Point shore and never less than 500 metres. Fully loaded travelling speed is between 8 and 10 knots to minimise the height of bow waves; at this speed, bow waves would be half a metre at the vessel.

OTHER VESSELS

Huon’s vessel portfolio comprises of 85 boats working on waters throughout our marine farming areas in Tasmania’s south and west coasts. Annual surveys are undertaken to keep our vessels at the best possible standard. To ensure best practice, we have emulated the regulation survey required for Australian Maritime Safety Authority (AMSA) which is required once every five years.

Automatic Identification System (AIS) trackers have been installed on our larger vessels and/or vessels with frequent waterway traffic movement which assist with monitoring our vessel use and routes. These include vessels that are used for mooring, net cleaning, feed delivery, working vessels to change nets, smolt delivery, harvest pickups, staff transport, and bathing.

Noise compliance for all Huon (incl. contract) vessels and marine farm equipment are currently assessed against three regulatory regimes:

- *Environmental and Pollution Control (Miscellaneous Noise) Regulations 2014* for vessel noise at source;
- *Requirements for the Control of Noise Emissions at Marine Farms (2001)* for DPIPWE marine farm requirements; and
- *Environmental Management and Pollution Control Act 1994* for environmental nuisance.

