

Head-to-head testing proves savings with Sonihull

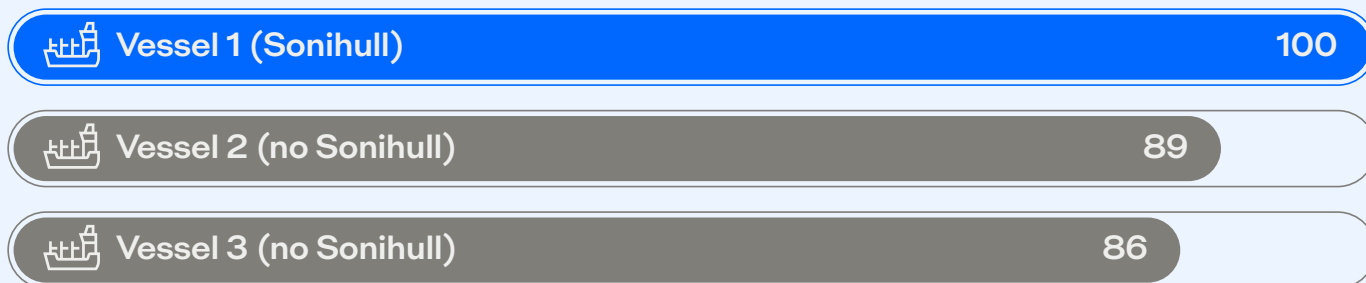
Direct comparison at sea

Alfa Laval Sonihull, which combats biofouling with ultrasound, promises substantial fuel savings through maintained hydrodynamic efficiency. In a comparative study across three sister vessels, the promise was put to the test – revealing fuel savings of up to 16% and payback in just over six months.



Fuel efficiency comparison

Seagoing speed band: 12–14 kn



The values above show the relative fuel efficiency of the three sister vessels in the critical seagoing band. Vessel 1 (equipped with Sonihull) is used as the reference (Index = 100). Vessel 1 and Vessel 3 diverge by 14 percentage points, which is a 16% difference in fuel efficiency.

Three vessels, one year of data

In 2024, Sonihull ultrasonic anti-fouling technology was retro-fitted on one of three sister vessels that trade along the Eastern Australian coast. The other two vessels were left unprotected. Given their nearly identical construction and sailing profiles, this created a unique opportunity to verify Sonihull claims.

The shipowner agreed to monitor vessel performance data throughout 2025. How would the hydrodynamic efficiency of Vessel 1 – with Sonihull on its hull, sea chest and propellers – fare compared to that of Vessels 2 and 3? How much fuel would Vessel 1 save?

Sonihull technology in action

Sonihull uses ultrasound to create gentle agitation on wetted surfaces. This prevents the formation of biofilm, and the microscopic movement of the water inhibits the attachment of barnacle and mussel larvae. Without chemicals or mechanical intervention, hulls and propulsion systems remain free from marine growth.

When surfaces stay clean, vessels retain their hydrodynamic efficiency and save fuel over time. This was evident in the Australian study, where Vessels 2 and 3 quickly consumed more fuel than protected Vessel 1.

What the data showed

Because fuel consumption per nautical mile is highly dependent on speed, the data from 2025 was sorted into normalized speed bands. Across all bands, Vessel 1 with Sonihull was 4% more fuel efficient than Vessel 2 and 5% more efficient than Vessel 3.

In the critical seagoing speed band of 12–14 knots, the results were even more striking. Vessel 1 with Sonihull was 12% more fuel efficient than Vessel 2 – and outperformed Vessel 3 by a full 16%.

Verified by propeller slip

To be sure the efficiency differences were tied to biofouling, propeller slip was evaluated as an independent fouling indicator. Propeller slip quantifies the gap between theoretical thrust and a vessel's actual forward movement. When the propeller and hull are clean, propulsion is efficient and propeller slip is lower.

On Vessel 1 with Sonihull, the propeller slip average was just 3.4% for the year. On Vessel 2, it was 9.25%. Vessel 3 fared better, showing an average of 5.04% for 2025. But when new data was collected in January 2026, its propeller slip had also climbed to 9.87% – while Vessel 2 was now at 15.51%. This supports the conclusion that Vessels 2 and 3, unlike the vessel protected with Sonihull, have accumulated a growing biofouling penalty.

The numbers on the bottom line

Maintaining or losing efficiency has a direct impact on fuel costs. Compared with its sister vessels, Vessel 1 saved around 403 tonnes of fuel over 2025 – equivalent to around USD 242,000 at a cost of 600 USD/t. Against an investment cost of USD 132,000 to equip Vessel 1, Sonihull paid for itself in just 6.6 months.

In subsequent years, everything the shipowner saves with Sonihull will be pure profit.

Added to the cost savings, of course, is a substantial reduction in CO₂ and other emissions. With low CAPEX and rapid pay-back, Sonihull contributes to greenhouse gas strategy and an improved CII rating.

Replicating success across the fleet

For the Australian shipowner, the test results made the next step straightforward: signing a Sonihull Fleet Agreement. During their next dry dockings, Vessels 2 and 3 will be fitted with identical full-scope Sonihull installations.

This follows the experience of many other operators who have gone from single-vessel trials to full fleet adoption. With Sonihull's simple and scalable construction, a proven configuration can easily be repeated – making biofouling management both consistent and economical.

Fuel saved (1 yr)

≈ 403 t

Cost saved (1 yr)

≈ USD 242,000



Contact Alfa Laval

Up-to-date Alfa Laval contact details for all countries are always available on our website at www.alfalaval.com