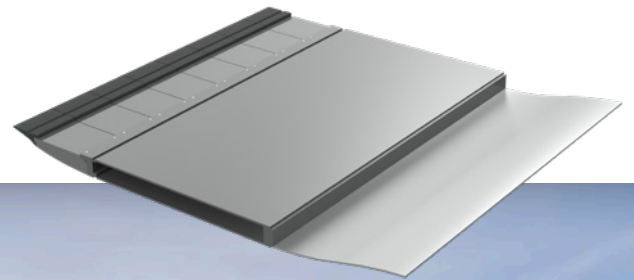




Alfa Laval OceanGlide – a smooth path to real savings

Experience on the M/V Tharsis

As managers of Tharsis Sea-River Shipping, Jan Albert Bosma and his colleagues run a typical captain-owner business, engaging in single-vessel trade between the Netherlands, Germany and the UK. Their cargo vessel M/V Tharsis has an edge that is anything but typical: Alfa Laval OceanGlide. With demonstrated net fuel savings of 7–10%, the fluidic air lubrication technology is benefitting the Tharsis today – and is facilitating plans for a green future.



Taking charge over environmental impact

Tharsis Sea-River Shipping was started 40 years ago by Bosma's parents, who were pioneers in sea-river trade. Having built its reputation on high flexibility, the company is on its fifth vessel and is well established today. But the pioneering tradition continues, especially when it comes to reducing environmental impact. In this regard, Bosma and his colleagues are moving much faster than their peers.

"Others call us crazy for having a strong focus on things that aren't compulsory yet," Bosma says. "But you have to take the long-term perspective, because the investments in these technologies are substantial. Given the speed that regulations are changing and the high cost of fines, we won't survive in 10 years if we don't do this now. We can either retire, or we can have a plan."

For Bosma, the plan undoubtedly includes Alfa Laval OceanGlide. "We've installed on the Tharsis, and we're very positive," Bosma says. "We've seen good fuel savings – very good economy."

Discovering the difference

The Tharsis, which was a frontrunner in using diesel-electric propulsion, is currently experimenting with a range of environmental technologies, including wind assistance. Yet the OceanGlide fluidic air lubrication system was a result of fortunate coincidence.

"We weren't planning to install air lubrication at all. It's been tried on a number of river vessels over the last 25 years, and it hasn't worked on any of them," Bosma explains. His mind changed after a chance meeting with one of the people behind OceanGlide technology, who assured him that typical fuel savings of 8–12% were possible.

"As soon as we switch the system on, we can see the vessel's speed increase, even when the compressor is at idling speed."

Jan Albert Bosma
Managers of Tharsis Sea-River Shipping

"We discussed the ambitions for our vessel, and they were looking for a someone to perform controlled tests of their technology," Bosma says. "One of the things that gave us confidence that the system could work was the professional manner in which they approached it. From day one, they didn't leave anything to chance."

Proof in real-life percentages

Indeed, since it was installed on the Tharsis in 2020, the OceanGlide system has lived up to its fuel-saving promise. The proof, which was clear from 25 test runs in loaded and ballast conditions, has only grown stronger over time.

"We see the results that we've measured ourselves – and you always want to see for yourself," Bosma says. "The savings in real life vary, depending on the sailing profile, the vessel's speed and the weather circumstances. So we've had trials with 7–9% savings, and we've had savings over 15%. Life's not ideal, so you can't get 15% on a daily basis. But we average between 7% and 10%, which is definitely in the range claimed."

To Bosma's surprise, the technology delivers savings even during river travel, performing equally well with a small underwater clearance. Moreover, it can be used to boost speed as well as economy.

"As soon as we switch the system on, we can see the vessel's speed increase, even when the compressor is at idling speed," Bosma explains. "We have a tidal window in the UK where we have to sail in at high tide, and missing that window means a 12-hour wait. By using this to increase the speed of the vessel a bit, we can just make it where we'd otherwise just miss it."

The simple strength of fluidics

What makes the difference compared to traditional air lubrication, Bosma says, is the consistent layer of bubbles produced by the patented OceanGlide technology. This even air layer is generated by fluidic oscillators across the vessel's beam, which emit 240,000 micro-bubbles per second and metre.

"That's really the secret weapon, this refined way of building up the air layer with oscillators and very tiny bubbles," Bosma relates. "The competition pump very rough air under the vessel, injecting it in just a few spots, whereas we have three bands of oscillators and thousands of points where the air is released."

"The advantage of this system is its simplicity. On a newbuild, you could build it in and you wouldn't even find it – that's how simple it is."



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Sea-River Shipping

The oscillator bands, which have a low profile and no moving parts, can be installed easily at any shipyard. On the Tharsis, the installation took only a few days during normal dry docking.

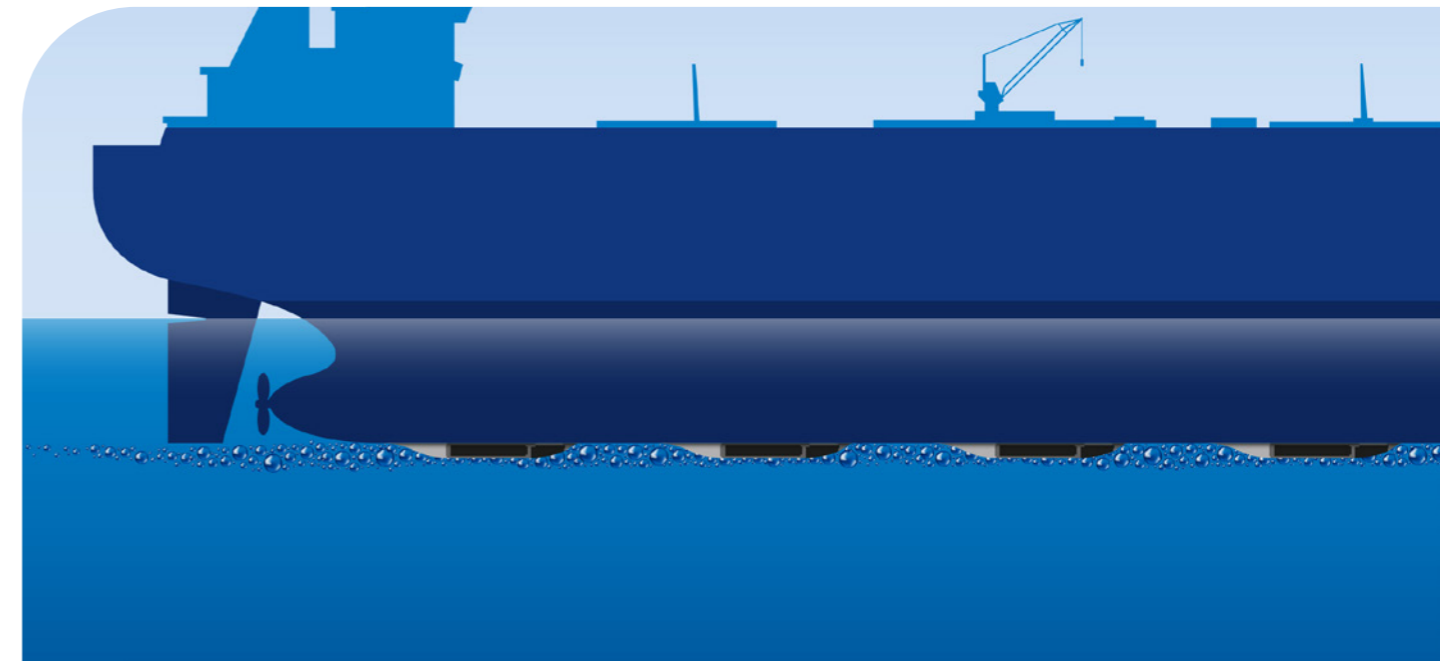
"Some air lubrication systems are quite complicated, requiring a completely flat bottom and considerable changes," says Bosma. "The advantage of this system is its simplicity. On a newbuild, you could build it in and you wouldn't even find it – that's how simple it is. For us as a retrofit, I think it took four or five days to install, and there's nothing we have to do under the vessel to maintain it."

Vibrations and noise disappear

As non-invasive as the system was to install, its presence is even less noticeable when it comes to the vessel's operating characteristics. On the Tharsis, Bosma and colleagues have seen no changes in stability or manoeuvrability. What they feel and hear, however, is very different.

"As soon as we switch the system on, the vessel becomes very calm," Bosma says. "It feels like the aft of the ship, where the propellers are, is dampened. It's like air suspension – the vibration is just gone. And since it's a relatively small vessel, where there's not a lot of distance between the propellers and the accommodation, you can really hear a large difference. It's not a sales argument, but it really has an impact for sleeping on board."

In time, Bosma would like to know the exact difference below the waterline, given that marine noise regulations might one day appear. "I'm convinced that legislation will come eventually, so it would be interesting to investigate in a next step," he says. "They're doing a lot of underwater noise measurements in the North Sea, and reducing noise will be a big challenge."





Changing the game for green investments

Looking ahead, Bosma sees OceanGlide as part of a wider picture in a future newbuild design. The energy savings it provides could help facilitate the transition to zero emissions, by making it easier to move from diesel-electric power to battery-electric power.

“We’ve seen that it would be realistic to sail on battery power in our short-distance trade,” Bosma says. “The battery technologies are there, but they’re expensive, so you need to have a business case compared to the current fuel costs and sailing profile. We don’t want to experiment with a newbuild, and that’s why we need to try energy-reducing systems on our current vessel. If anything, the savings will be even greater on the new design, which has double the beam we have now.”

Bosma also hopes for synergy between fluidic air lubrication and wind technology. As a participant in the North Sea region’s WASP (Wind Assisted Ship Propulsion) Project, the Tharsis has installed two aluminium sail wings for additional thrust.

“We’re very interested to see what will happen when we combine the two technologies,” Bosma says. “We’re doing a lot of measurements on board, and we’re even looking at an AI solution to fine-tune the interaction. Between air lubrication and wind propulsion, we really expect to increase the time that the Tharsis can sail on just one of its three generators.”

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A partner in Alfa Laval

Meanwhile, Bosma and his colleagues are working with Alfa Laval to optimize the OceanGlide system on the Tharsis. The profiling under the hull will soon be upgraded, and the compressor capacity will be reduced. Since it was dimensioned to provide a wide power range for the controlled tests, the compressor has never used more than half its installed power.

Bosma, who is enthusiastic about the cooperation and results, is looking forward to continued collaboration with Alfa Laval. “The people there have worked on vessels themselves, so we speak the same language and we’re on the same wavelength,” he says. “They look at the whole picture, they welcome our ideas and we’ve had good communication from day one.”

He concludes, “The competition isn’t really interesting to us. We know what we’ve got.”

How to contact Alfa Laval

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

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