Floating on air

by Alistair Mackenzie, *Chief Commercial Officer, Silverstream Technologies*

The Silverstream® System is an air lubrication technology that harnesses fluid dynamics to reduce the frictional resistance between the hull and the water, cutting average net fuel consumption and greenhouse gas emissions by 5-10%. All shipping segments can take advantage of the system, which is effective in all sea states and suitable for retrofit installations and newly built vessels. Orders for our solution grew in 2023, with proven system performance and collaboration playing an important role. Looking ahead, we see data and digitalisation as key to the broad evolution of clean technology.

From lower fuel costs to superior Poseidon Principles-aligned funding, many factors drive clean technology adoption. Evolving industry regulations – such as the European Union's Emissions Trading System and its FuelEU Maritime Regulation, along with the International Maritime Organization's (IMO) Carbon Intensity Indicator – are only set to become more impactful in 2024 and beyond. Long story short, they are all expected to improve the commercial rationale for adopting fuel efficiency measures at the vessel and fleet levels.

At Silverstream, we have already seen an uptick in system orders in the past few years. As of December 2023, there are 183 vessels contracted to have the Silverstream® System installed across all shipping segments, with 54 in-service (our customers include, amongst other prominent industry names, Carnival, MSC, Maersk, Grimaldi, Shell, Vale, Knutsen, and ADNOC L&S). Of these, 33 are LNG carriers (LNGCs), including 13 that are already operational.

Off the back of our growing order book, we were also featured in the 2023 edition of FT 1000, a ranking recognising the top 1,000 companies in Europe based on revenue growth between 2018 and 2021. Its latest instalment placed Silverstream as the fourth fastest-growing company in Europe and the third in the UK.

Flat bottoms, spiky gains

The LNGC segment has been, in particular, putting its commercial weight behind clean technology and the Silverstream® System specifically. Most recently, in August 2023, we announced receiving ten orders for LNGC installations. Six of the undisclosed orders are for retrofit projects taking place between 2023 and 2025, and four are for newbuilds to be delivered in 2026-27.

Meanwhile, in January 2023, we signed an agreement with the CSSC Jiangnan Shipyard Group to supply the Silverstream® System for six 175,000 m^3 LNGCs, forming part of the newbuild LNGC programme being constructed for the Abu Dhabi National Oil Company.

We also signed an agreement with China Merchants Energy Shipping in January 2023 to install the Silverstream® System on four 175k m^3 LNGCs built by the Dalian Shipbuilding Industry Company (DSIC). The installations will take place over two years, with work expected to be completed by the end of 2024 per DSIC's building schedule.

Our system is well-suited to the LNGC segment as these vessels have a large flat bottom that maximises our technology's friction-reducing capabilities. The system reduces average fuel consumption and emissions for LNGCs by 7-10% net, which typically equates to saving one megawatt of net power.

The system can also help to reduce LNG boil-off and increase delivered cargo volume or cut fuel consumption and associated emissions, depending on the operator's commercial and sustainability priorities. This is because air lubrication can enable vessels to travel at higher speeds for the same fuel consumption or cut bunker (hence emissions) without sacrificing speed.

According to research based on recent Clarksons data, the global LNGC fleet will exceed 1,000 ships by 2026. So, while the sector's investment in air lubrication has been positive, plenty of vessels will still require energy efficiency improvements if the shipping industry is to meet its emission reduction targets.

Collaboration has also been vital to propelling the uptake of our clean technology in 2023. To rise to demand from the LNGC newbuild segment, for example, we have collaborated with many shipyards and placed particular focus on the Asia-Pacific region (APAC). In Europe, we recently signed a collaboration agreement with MAN Energy Solutions, whose two-stroke engines are the preferred choice of propulsion for large oceangoing vessels,

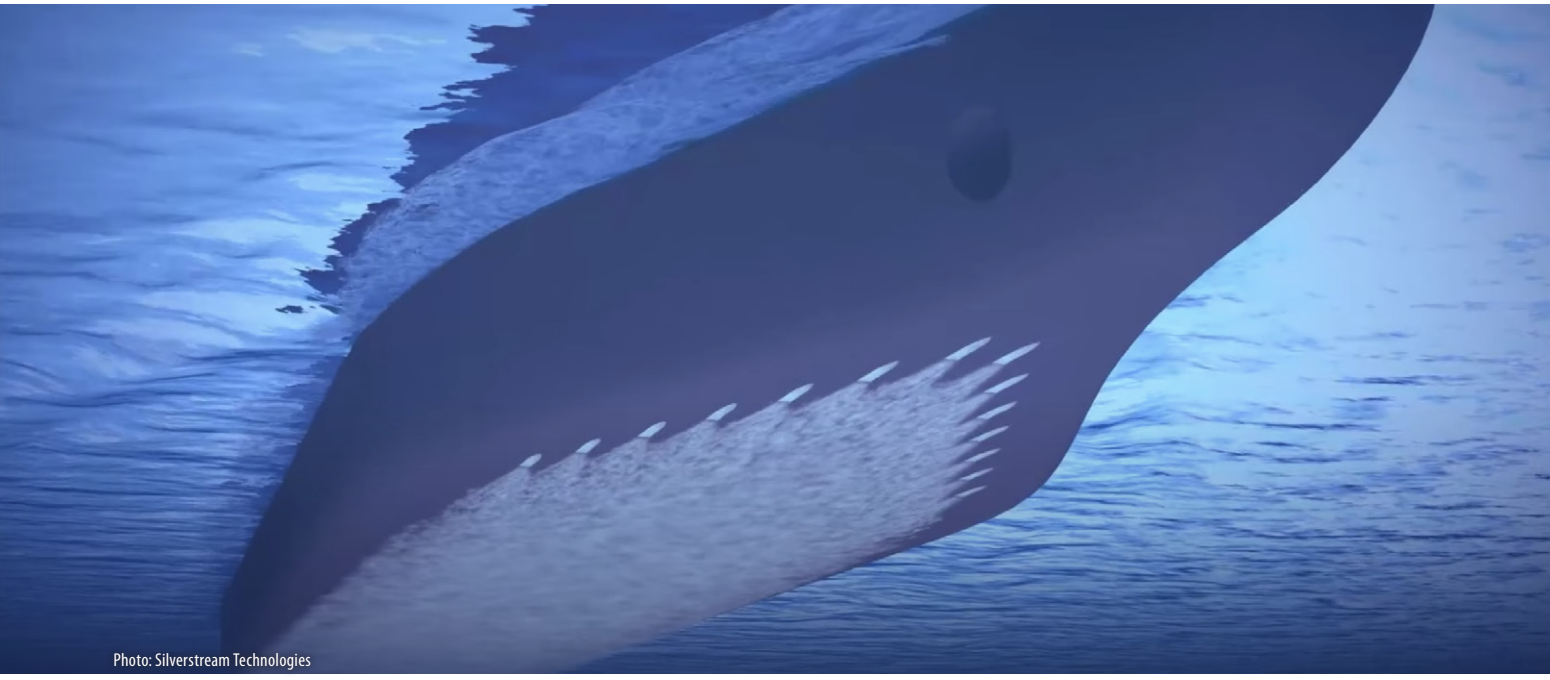

Photo: Silverstream Technologies

for which our Silverstream® System is especially effective due to the size and shape of their hulls. With approximately half of the world's commercial tonnage powered by MAN, the partnership will help further accelerate the adoption of our technology across the global fleet, spanning both newbuild installations and retrofits. Broadly, it will help pave the way for the cleaner, greener, and more efficient vessels needed to achieve IMO's emission reduction targets. Through this collaboration, we are pursuing the mantra that the greenest fuel is the one you do not use.

From nice- to must-have

The shipping industry increasingly recognises that clean technologies can play a central role in decarbonisation today. However, we must also keep one eye on how they will evolve and iterate to meet the needs of tomorrow and stand up to the rigours of the entire lifespan of a vessel.

Leading solutions have a proven record of emission-saving performance; it is critical to accurately calculate, measure, and report clean technologies' efficiency level and decarbonisation impact. Access to more and better performance data is now allowing for more precision when calculating and verifying the impact of technology. Essentially, monitoring and measuring performance data, likewise system health, will be an integral component of not just our solution but all clean technologies in the near future.

Clean tech manufacturers will also use data and digitalisation to raise both the floor and ceiling of fuel-saving potential. Like the intelligent systems within modern cars that tune the vehicle's engine as it drives, maritime clean technologies will learn and respond to their environment and operate in a way that ensures maximum efficiency.

Because clean technologies are deeply integrated into a vessel, there is the potential for them to identify and unlock efficiencies that others may not even know existed. In other words, they become active and intelligent solutions to maximise the performance of a ship. We can harness data from our system, alongside multiple sensors around the vessel, to gain an in-depth understanding of air lubrication technology and identify factors that could influence the ship's overall performance and allow us to tailor in-service support.

The shipping industry's increasing focus on data and the surge of digital solutions in recent years indicates a shift from viewing data as 'nice to have' to recognising it as a vital catalyst for driving industry transformation. Many shipowners and operators now acknowledge the significance of the digital journey and the potential of data. It is no longer a matter of whether the industry will embrace digitalisation and data, but rather, when and how rapidly it will do so – and whether one's ready for it.

We are transitioning from an era where data was collected and stored passively, often leading to valuable insights being overlooked or forgotten, to a phase where data is being actively leveraged to inform business decisions and strategies. This actionable data has become a driving force behind both the industry's digital transformation and its decarbonisation agenda.

A lifecycle option

The growing uptake of our air lubrication system and clean technology in 2023 makes commercial and environmental sense, and we expect increasingly impactful decarbonisation drivers to propel the uptake of efficiency solutions further in 2024. Collaboration across the clean technology value and supply chains, as well as work in critical segments such as LNGCs and regions such as APAC, have been instrumental in making an impact today.

Meanwhile, looking ahead, a focus on the evolution of clean technology via data and digitalisation is pivotal to reinforcing that these solutions represent a lifecycle option designed to last a vessel's lifespan. ■

SILVERSTREAM TECHNOLOGIES

The London-headquartered Silverstream Technologies is a market-leading maritime clean technology company specialising in hull air lubrication. Its Silverstream® System reduces frictional resistance between the water and the hull surface, reducing net fuel consumption and associated emissions by an average of 5-10%. The system is unique in that it is the only proven air lubrication technology that can be retrofitted in ten days or less, as well as being applicable to newbuilds. It lasts the lifetime of the ship, is complementary to and can be used in conjunction with other clean technologies, and a return on investment is typically between two and five years. Visit **silverstream-tech.com** for more information.