



FOR IMMEDIATE RELEASE

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**SILVERSTREAM AIR LUBRICATION TECHNOLOGY PROVEN TO DELIVER SIGNIFICANT LONG-TERM ENERGY SAVINGS**

***Extensive performance analysis confirms net savings in excess of 4%.***

Silverstream Technologies and Shell today confirm consistent net efficiency savings in excess of 4% in fuel consumed, following the successful long-term operation of Silverstream Technologies' proprietary air lubrication technology, the Silverstream® System, on-board the 40,000 DWT tanker *MT Amalienborg*. Further analysis of the data gathered through this process predicts that for larger vessels, efficiency savings of up to 8% are possible.

Data was taken from the *MT Amalienborg* under 'business as usual' commercial operations encompassing all operating conditions. The results align with those obtained from full-scale sea trials completed in 2014 by Shell and Lloyd's Register Ship Performance Team. Data gathered during operation demonstrates savings commencing at 10 knots, and also proves that increased speed brings increased savings. Further calculations, based on the sea trials and verified by the long-term performance monitoring of the *MT Amalienborg*, predict that greater savings of up to 8% are possible on larger vessels such as LNG carriers and Suezmax tankers. The patented Silverstream® System is unique in its cavity design and energy balance; using very little power to generate the micro-bubble layer.

In-service operational data gathered over the last two years has been verified by Professor Dominic Hudson, Shell Professor of Ship Safety and Efficiency within the Faculty of Engineering and the Environment at the University of Southampton. Professor Hudson confirmed that savings increase with speed, and that net power savings of 4.1% were delivered at 14 knots.

"Through our partnership with Shell we have obtained verified detailed data, gathered over an extensive period of testing and trials, which demonstrates the system's performance. Transparency about our savings results and the fact they are based on operational conditions provides assurance to the industry that the Silverstream® System delivers real savings and tangible results," said Noah Silberschmidt, CEO, Silverstream

Technologies.

“Over the past two years, Silverstream Technologies has continued to develop and enhance the system, making engineering improvements which have resulted in negligible drag when the system is switched off, as well as improvements in compressor efficiency, and installation footprint. These improvements would further increase the savings and net efficiency reported. Based on the rigour of this ground-breaking process, and the continued verification and development of our air lubrication technology, we are confident that the Silverstream® System will play a crucial role in supporting the industry in increasing operational and environmental efficiencies and, in turn, reducing emissions.”

“At Shell, we believe that innovation and technology are key to improving the efficiency of our shipping operations. The rigorous testing process and successful performance during operational conditions proves that the Silverstream® System can reduce ship fuel consumption and lower emissions accordingly. This is an important innovation that can improve shipping efficiency,” said David Connolly, Senior Principal Technologist at Shell Shipping Technology.

The Silverstream® System is a fully integrated solution designed and engineered by Silverstream Technologies, and is suitable for both newbuildings and retrofit. Shell funded the installation of the pioneering air lubrication system on the *MT Amalienborg*, owned by leading Danish Shipping company Dannebrog Rederi, part of the WECO Group A/S. The Lloyds Register Ship Performance Team independently verified the sea trials.

Johnny Schmolker the CEO of WECO Group A/S commented:

“We are pleased to have had the opportunity over the last two and a half years to operationally test the Silverstream® System. As well as delivering the expected fuel savings, the crew has found the system easy to operate and maintain, and we look forward to working with Silverstream Technologies in the future.”

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**Notes to the editors:**

- Once installed, the Silverstream® System produces a thin layer of micro bubbles for the full flat bottom of the vessel, reducing the frictional resistance between the water and the hull, and improves the vessel's operational efficiency, reducing fuel consumption and associated emissions.
- The Silverstream® System is designed and engineered by Silverstream Technologies as a fully integrated solution and comprises purpose-built steel cavities and high-performance compressors controlled by an on-board control and monitoring system.

**About Silverstream Technologies**

Silverstream Technologies B.V. has pioneered air lubrication within shipping for over ten years, and has invested significantly in the research and development, and testing of air lubrication for ships. The Silverstream® System reduces frictional resistance between the water and the hull surface, dramatically

reducing fuel consumption and associated emissions. The Silverstream® System is unique in that it is the only proven air lubrication technology that can be retrofitted in 14 days or less, as well as being applicable for newbuildings. It lasts the lifetime of the ship, is complementary to and can be used in conjunction with other clean technologies, and return on investment is typically between two and five years.

#### **About Shell Shipping& Maritime**

Shell Shipping & Maritime is Shell's centre for maritime expertise. Located within Shell's integrated Trading and Supply business it provides commercial, ship management and technology services, along with assurance advice to internal and external customers. We manage a fleet of more than 40 LNG carriers and around 10 oil tankers and have more than 240 oil and LNG tankers on time charter.– making Shell one of the largest LNG shipping operators in the world.

On a typical day there are 1,500 vessels carrying a Shell cargo. We employ more than 1,000 international fleet marine officers with LNG experience and more than 3,000 seafarers in total. Every five minutes there is a vessel associated with Shell that is loading or discharging cargo somewhere around the world.

#### **About Dannebrog Rederi**

Dannebrog is part of Weco Group. Weco Group consists of Dannebrog Rederi, Nordana, Stena Weco and Weco Bulk. Dannebrog Rederi manages a number of tankers as well as dry cargo vessels within its fleet management department. Nordana focuses on break bulk liner services, operating multipurpose and ro/ro vessels. Nordana is recognized as a specialty carrier, able to accommodate its customer's varying needs for cargo handling, reliability and port calls. Nordana Project & Chartering is an independent division within Nordana, operating a fleet of various tonnages owned and chartered on period and voyage. Stena Weco – the joint venture between Stena Bulk and Weco – has embarked on the journey towards being the market-leading operator in the MR tanker segment. Weco Bulk offers its services to shipping companies and business enterprises worldwide as a provider of maritime transport and logistical service for the majority of bulk goods, including agricultural, steel, scrap, aluminum, cement, coal, pet coke, iron ore and wood pellets.

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