

OUR INVESTMENTS IN SUSTAINABLE SHIPPING

“ With a greener asset portfolio, we are on track to meeting International Maritime Organization (IMO)’s 2030 targets of reducing greenhouse gases (GHG) intensity by 40% (against 2008 baseline), as well as our long-term commitment of net-zero emissions by 2050. ”

THE CASTOR INITIATIVE

In 2020, MISC allied with three maritime industry players: Samsung Heavy Industries, Lloyd’s Register and MAN Energy Solution. The Joint Development Project to develop commercially viable deep-sea zero-emission vessels (ZEV) by 2030 is aligned with:

- The International Maritime Organization’s 2050 greenhouse gas (GHG) aspirations; and
- Getting to Zero Coalition’s commitment.

The three companies including Lloyd’s Register, Samsung Heavy Industries and MISC, as founding members of The Castor Initiative, are taking the

lead to encourage the use of green ammonia as propulsion fuel for the development and construction of the first two ammonia dual-fuel zero-emission VLCCs, which will be owned and operated by AET in late 2025 and early 2026.

The Castor Initiative members will focus on identifying green shipping corridors to facilitate the bunkering of these zero-emission VLCCs. This is certainly a landmark step forward which signifies MISC and AET’s longer term net-zero GHG emissions commitment by 2050.

DUAL-FUEL VLCCS

In March 2021, Shell signed an agreement with AET for the chartering of three LNG dual-fuel VLCCs on a seven-year long-term energy-transportation contract. The ships are being built by DMSE in South Korea and will be delivered to AET in 2023.

The dual-fuel VLCCs are designed to be energy efficient and in compliance with IMO’s 2025 Energy Efficiency Design Index (EEDI) III level. Each vessel will have an electronically controlled, gas-injection (MEGI) engine that can significantly reduce methane emissions. The ships will generate negligible methane slip during operation, making them among the most environmentally friendly vessels available with a 99% reduction in sulphur oxides (SOx), 85% reduction in nitrogen oxides (NOx), 95% less particulate matter (PM), and up to 30% less CO₂ in LNG mode as compared with the diesel engine.

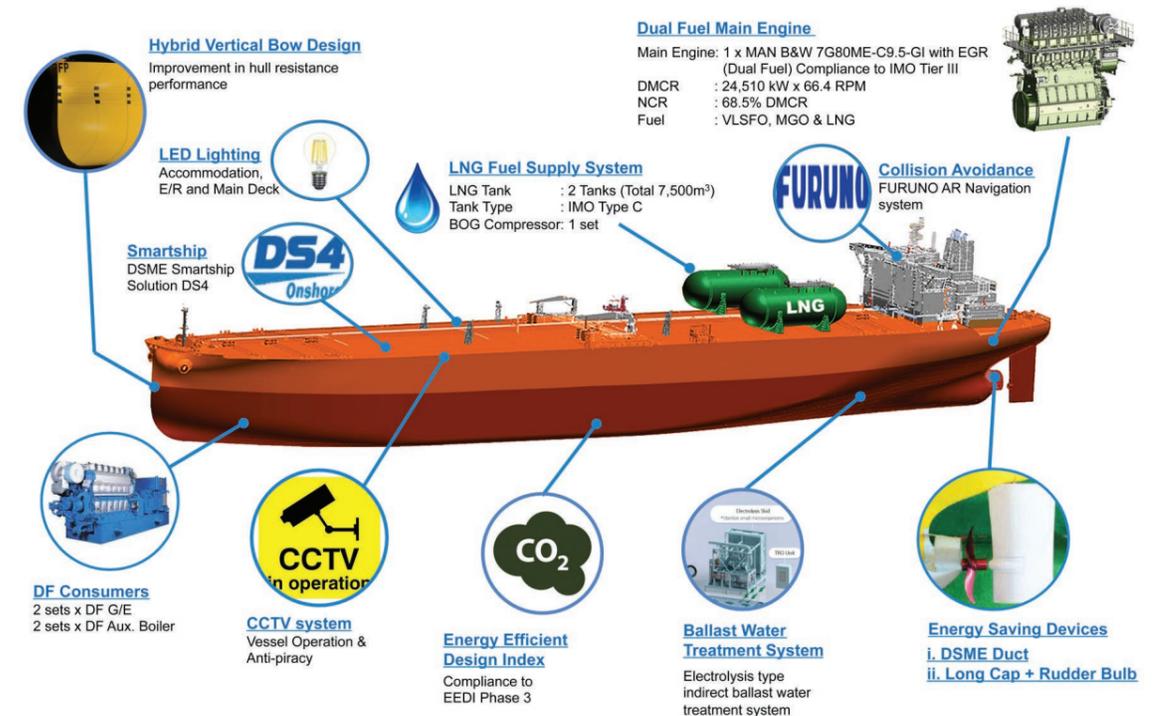
The hybrid vertical bow design of the dual-fuel VLCCs will provide better hull-resistance performance at sea as compared to the conventional bulbous bow. The ships will be fitted with energy-saving devices, such as the DSME Duct and Long Cap and Rudder Bulb that can improve hydrodynamics and collectively deliver up to 2.5% energy-efficiency improvement. The technologically advanced dual-fuel VLCCs will significantly reduce emissions and deliver other environmental benefits in line with AET’s environmental, social and governance (ESG) priorities and the energy transition goals of our customers.

AET is a pioneer in LNG dual-fuel vessels with a growing fleet of dual-fuel assets. The dual-fuel VLCCs are a continuation of our commitment to investing in sustainable shipping solutions that are both economically viable and environmentally compliant. While the strategic contract with Shell will provide AET with secure and stable income over a longer horizon, it is a key milestone for us in meeting IMO’s 2030 GHG targets and steering our investments towards a zero-emission asset portfolio beyond 2030. We are fully committed to anchoring AET as a global leader in sustainable energy shipping.

Emissions Reductions



Primary Features of AET’s new dual-fuel VLCCs



STRATEGIC INVESTMENT IN DAPHNE TECHNOLOGY

The transition to sustainable energy sources is already reshaping the global economy at a fundamental level. However, meeting the net-zero goal set by the Paris Agreement on Climate Change and IMO’s GHG goals will require a dramatic reduction in GHG emissions. Solutions are urgently needed to help hard-to-decarbonise sectors move towards net-zero.

In 2021, AET, along with Shell Ventures, Trafigura and Saudi Aramco Energy Ventures, invested in Daphne Technology, a Swiss climate tech start-up that was a spin-off from the Swiss Federal Institute of Technology in Lausanne. The team at Daphne Technology has developed a patented exhaust gas purification technology that can remove multiple air pollutants from different fuel types (such as NOx, and SOx from Heavy Fuel Oil) and reduce emissions (such as NOx, SOx, methane and ammonia slip).

Daphne Technology’s green converter can break down pollutants and convert them into non-hazardous by-products. These harmless by-products are then released into the environment or transformed into valuable products, such as fertilisers. In a single stroke, the technology will not only reduce GHG emissions but create a circular economy where by-products are upcycled.

Designed as a plug-and-play solution, the products by Daphne Technology have enormous potential to benefit any hard-to-decarbonise sectors that are struggling with GHG emissions. They will make energy transition economically sustainable for these sectors, and provide new opportunities for companies seeking promising technology in a sustainable future.

Our investment in Daphne Technology marks AET’s entry into R&D for GHG abatement technologies, which is closely aligned with our ESG strategy and ongoing decarbonisation efforts. As an advocate of LNG as a greener solution in support of maritime decarbonisation, AET will invest further in technologies to reduce methane slip and improve well-to-wake emissions.

As a fleet operator, AET will be trialling Daphne Technology’s products on our vessels which use different fuel types, including LNG in the newer ships with dual-fuel engines. We will be able to monitor first-hand the effectiveness of the green converter and collaborate with Daphne Technology for validation of empirical data and further enhancements. With the green converter and other innovations that will come out of Daphne Technology, AET will be charting a new course for sustainable shipping in 2050 and beyond.