



Newsletter IEA Bioenergy Task 37: 02/2021 Shipping and More

Construction of LNG and LBG-powered ferry on schedule

Construction of a new car and passenger ferry in Finland that will partly run on liquefied biogas is on schedule, despite the coronavirus pandemic. Rauma Marine Constructions said work on the new ferry for Wasaline will operate between Vaasa in Finland and Umeå in Sweden and will accommodate 800 passengers. The vessel, due to be delivered to Wasaline in spring 2021, will also have a freight capacity of 1,500 lane metres for cargo. The Aurora Botnia will have a hybrid power generation system, as well as an electric propulsion system 'rarely used' in car and passenger ferries. The vessel's four main engines, supplied by Wärtsilä, will run on liquefied biogas and liquefied natural gas. According to Wasaline the vessel will be the world's most environmentally-friendly car and passenger ferry.

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Biomethane used in major Dutch LNG bunkering operation

The world's largest containership powered by liquefied natural gas (LNG) has completed its first LNG bunkering with Total's LNG bunker vessel, the Gas Agility, at the Port of Rotterdam in the Netherlands. The 23,000 tons containership received around 17,300 m³ of LNG, incorporating 13% biomethane, making it the largest LNG bunkering operation to ever take place. As part of this milestone operation, the carbon footprint of the LNG delivered was reduced with the introduction of biomethane for approximately 13% of the quantity delivered, through Guarantee of Origin certificates. The biomethane is produced in the Schiphol area, derived from mainly organic municipal waste.

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Low carbon shipping fuels and energy guide published

BLUE *Insight's Low Carbon Shipping Fuels and Energy Guide 2020* is a market first assessment of the leading low carbon marine fuels with potential to replace fossil fuels as the marine fuel of the future and analyses the companies, the R&D projects and collaborations, producing and supplying these fuels. The IMO's GHG policy aims to reduce shipping's carbon intensity by at least 40% by 2030 and 70% by 2050, in comparison to a 2008 baseline. It also aims to reduce shipping's overall GHG emissions by 50% – again against 2008 levels – with the aim of phasing them out completely, to make shipping a zero-emission sector. However, this goal requires much higher investments than originally thought. According to UMAS, a capital investment of between US\$1.4 and US\$1.9 trillion will be required. In addition, the fuels of the future will need to replace the energy generated by more than 5 million barrels of fossil fuel per day or 300 million tonnes per annum. To add to the mix, much of the capital and infrastructure needed to meet the IMO's target of reducing GHG emissions, requires land-based investments and developments that are largely out of the control of shipping itself. The *Insight Guide* covers 11 different fuels or technologies. Drop-in fuels will provide a cheaper and potentially easier option than fuels requiring more substantive adaptations to the supply chain of the vessel itself. Drop-in fuels have the potential to mitigate the infrastructure issue. These are fuels that can utilise existing storage, transport and bunkering infrastructure and vessel engines without requiring

modification. Nominally these fuels can also be used as a blend with other fuels. The next stages of LNG, bio and synthetic, alongside biofuels, are accepted as direct drop-in fuels.

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Balearia launched fast ferry with LNG engines

The world's first fast ferry for passengers and cargo powered by natural gas internal combustion engines, the Eleanor Roosevelt of Baleària, was launched at the Armon shipyard in Gijón, Spain. This innovative ship is scheduled to start operating in the first quarter of 2021. It is a pioneering ship worldwide that has had the participation of leading international companies and has involved an investment of 90 million euros. The Eleanor Roosevelt will also be the world's longest fast ferry. Specifically, the ship is 123 meters long and 28 wide, with a capacity for 1,200 passengers and a warehouse for 500 linear meters of trucks and 250 cars, or alternatively 450 cars. The four Wärtsilä dual engines, with a power of 8,800 kW each, of the Baleària Eleanor Roosevelt allow it to reach a service speed of 35 knots (with a maximum speed in excess of 40 knots). The two tanks for storing LNG suppose a range of 400 nautical miles in gas navigation (1,900 in the case of combined gas/diesel).

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SWEN Capital Partners raises €175m for renewable gas projects

SWEN Capital Partners has announced the final closing of its SWEN Impact Fund for Transition (SWIFT), Europe's first infrastructure fund dedicated to renewable gases.

The fund raised €175 million, exceeding its target amount of €120 million. SWIFT is SWEN Capital Partners' first impact fund and invests directly in biomethanation, renewable hydrogen, and RNG refuelling infrastructure for the shipping and overland transportation sector. SWIFT has made its first investments in methanation units, which are being developed as part of a co-investment programme with farmers. The units will be used to produce renewable energy needed in farming areas while also boosting the economy and local employment. The units will recycle agricultural waste by transforming it into renewable gas (biogas) and fertilizer. Once produced, the gas is injected into the natural gas network and becomes available to all gas consumers. The fund has already made five direct investments in France and Belgium, primarily in methanation units, but also in gas distribution units. Around 15 exclusive partnership agreements have also been signed in France, Italy, Belgium, and the UK.

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Renewi, Nordsol, Shell to produce bio-LNG in Amsterdam Westpoort

Renewi, Nordsol, and Shell have started construction on the first bio-LNG installation in Amsterdam Westpoort. The new bio-LNG installation is an extension for the current processing of, among other things, outdated supermarket products. With a multi-million-euro investment, technical partner Nordsol will be the first to produce bio-LNG in the Netherlands. Renewi will collect the organic waste throughout the Netherlands, such as expired products, process the waste, and convert it into biogas. Shell will sell the bio-LNG at its LNG filling stations. The technology makes it possible to efficiently separate pure methane from the biogas and liquefy it into bio-LNG. The CO₂ by-product is re-used in the market and, therefore, ensures an additional CO₂ emission reduction, according to Nordsol, leading to a 100% CO₂-neutral fuel. It is expected the installation will be operational within a year, as the standardised modules are produced elsewhere and connected on the Renewi site. It will produce 3.4 kilotons of bio-LNG per year and allow more than 13 million km of CO₂-neutral driving – equivalent to driving more than 370 times around the world.

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Reducing GHG emissions from ships

The International Maritime Organisation (IMO) has adopted 2018 mandatory measures to reduce emissions of GHG from international shipping under IMO's pollution prevention treaty (MARPOL). The

strategy developed provided a vision to phase out GHG emissions in the shortest time possible. They defined three levels of ambition: 1. Decline carbon intensity through improved energy efficiency of new ships; 2. Reduce CO₂ emissions per transport work by at least 40% by 2030 and 70% by 2050 compared to 2008. The progress has been documented by three studies. End of 2020 a fourth study has been published showing that the greenhouse gas emissions of total shipping (international, domestic and fishing) have increased from 977 million tonnes in 2012 to 1,076 million tonnes in 2018 (9.6% increase). The share of shipping emissions in global anthropogenic emissions has increased from 2.76% in 2012 to 2.89% in 2018. Under a new voyage-based allocation of international shipping, CO₂ emissions have also increased over this same period from 701 million tonnes in 2012 to 740 million tonnes in 2018 (5.6% increase). However, estimates on carbon intensity of international shipping and percentage changes compared to 2008 values in g CO₂/t/nm has decreased in the same period by more than 30%.

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