

LNG Fuelling

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DNV GL launches LNG bunker platform

Standards agency DNV GL has launched a new online bunkering platform for LNG, designed to streamline the process from purchasing to delivery.

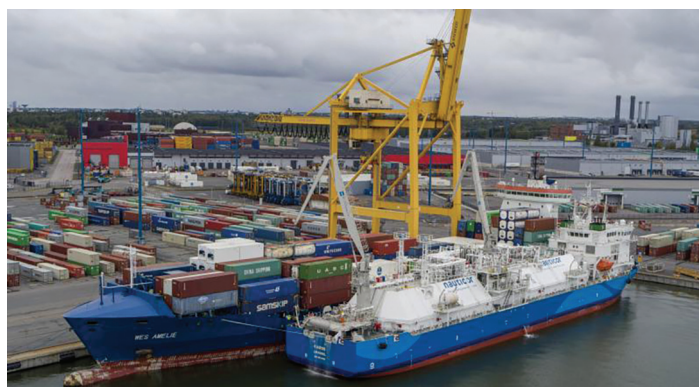
The FuelBoss system provides a single common platform for ship owners, operators and suppliers to organise nomination, scheduling, spot inquiries and business intelligence related to LNG bunkering.

"FuelBoss will standardize and simplify daily work processes and enable the LNG fuel industry to reap the benefits of digitalization. At the moment, both the interest in and the number of vessels using LNG is growing rapidly, but the bunkering picture is still fragmented. Delivery costs can be a significant part of the delivered LNG price, so optimizing the supply chain is essential," Trond Hodne, Senior Vice President at DNV GL, commented.

Accelerating uptake

DNV GL estimates the number of vessels relying on LNG will 'more than double in the next two years' with the complexities of LNG bunkering and planning also expected to increase rapidly as the fleet grows from vessels that 'primarily work fixed routes' to those in more general operation.

The new platform tackles this complexity by offering an integrated tool through which users can order bunker volumes in a



LNG bunker operation

standardized format, facilitating spot inquiries outside term contracts and providing access to a map-based overview of assets to keep track of LNG-fuelled ships and LNG bunker vessels through live and historic AIS feed.

"The idea behind FuelBoss is to accelerate the uptake of LNG in the maritime industry by providing suppliers with a highly efficient tool for managing all their customers and day to day operations, while offering ship operators a common interface for interacting with LNG suppliers," Hodne added.

The software is currently free for ship owners and other buyers of LNG fuel and a pilot is already underway with LNG suppliers Gasum, Cryo Shipping and Nauticor confirmed as customers.

Tailored digital tool

The software behind the platform has been developed by port call optimization and maritime supply chain specialist Teqplay, based on years of data from Shell LNG bunkering operations.

"With the complexity of planning and coordinating operations for serving their growing customer base, Shell saw the need for a tailored digital tool that standardized the planning and work processes around the LNG bunker vessel operations," Leon Gommans, CEO of Teqplay, said.

This software allows users to keep track of changes and monitor assets, sign and archive relevant documentation from the bunkering process and communicate through an integrated messaging service.

DNV GL is the world's largest classification society responsible for over 13,000 vessels and mobile offshore units. Headquartered in Bærum in Norway the organization also provides technical consultancy to the energy and transport sectors.



FuelBoss LNG bunker system

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Alternoil opens Europe's largest LNG vehicle fuelling station

Fuelling systems specialist Alternoil has commissioned the largest LNG vehicle fuelling station in Europe, near the city of Bakum in Germany.

Located Germany's main A1 highway, the station received final approval from local authorities in



Bakum fuelling station

December and was developed by cryogenics firm Chart Industries.

"Alternoil continues to offer maximum operator convenience through flexible, full-service truck centers that incorporate full integration of Chart equipment with other aspects of the station, including Alternoil's cashless payment system," Jill Evanko, CEO of Chart Industries, commented.

Saturation on the Fly

The site is equipped with Chart's proprietary "Saturation on the Fly" technology, designed to eliminate methane emissions and provide vital safety features such as recognition of both spark ignited and compression engines to allow seamless fuelling of all types of LNG trucks.

"Saturation on the Fly improves the station's overall energy management and provides a total refueling time consistent with equivalent diesel engine vehicles," Chart states.

German LNG network expansion

The commissioning of the Bakum site is expected to be the first in a

series of new LNG filling stations opened by Alternoil as part of a strategy to expand their German network. The firm is working closely with Chart to develop new sites, including proposed stations in Fulda, Cologne, Hamburg, Bremen and Remscheid.

"We continue to contribute to the development of the global LNG infrastructure ranging from liquefaction to marine to transportation," Evanko noted.

Headquartered in Steinfeld in the district of Vechta, in Lower Saxony, Germany, Alternoil is a provider of LNG and gas refuelling solutions as well as lubricants. ■

German JV plans LNG fuelling infrastructure

Developers of an LNG terminal project in Northern Germany have completed the pre-qualification process to select tenders, paving the way for a final decision within the coming months.

The German LNG Terminal joint venture has shortlisted four contractors' bids for the project and now expects to make a final investment decision by the middle of this year.

"On the commercial side, customers are pushing us quite hard to take the final steps in the next five months. We are finalising with regulators rules on several matters, amongst them a 'use-it-or-lose-it' mechanism," Marcel Tjihuis, business development manager at German LNG, said.

Significant step

The four bids shortlisted for the work are: Cobra Instalaciones y Servicios. - Sener Ingeniería y Sistemas; Hyundai Engineering - Korea Gas Corporation; Sacyr Fluor - Entrepouse Contracting / VINCI Construction Grands Projets. -

Sacyr Somague; Tecnicas Reunidas - Heitkamp HIKB.

"The launch of the EPC tender is a significant step in the continued development of the German LNG Terminal project, the aim of which is to develop, build, own and operate a multifunctional LNG import and distribution terminal," a spokesperson said.

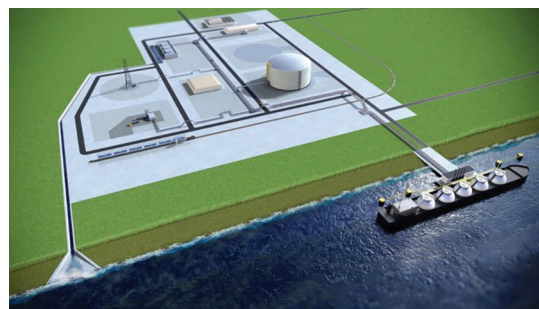
German LNG Terminal is a partnership of Dutch companies Vopak and Gasunie, with participation from German company Oiltanking, part of Marquard & Bahls. The consortium plans to build, own and operate a combined import and distribution LNG terminal, combining the partners' "considerable expertise" in LNG fuel handling.

"The market's reaction to the Brunsbuettel terminal project has been positive with interest from

future customers reflected in the execution of several Heads of Agreements. The application for exemption from regulated third party access and the permit application are based on 8 bcma terminal capacity," the partners noted.

Open access to LNG

Once complete, the new hub is expected to strengthen the region's bunkering capacity and provide multi-purpose services as well as open access to LNG fuel. Brunsbuettel was chosen as the location for the new facility due to its proximity to the North Sea, the



Artist's impression of German LNG Terminal

Kiel Canal, the port of Hamburg and ChemCoast Park, which are expected to give it easy access to markets in North-West Europe, Scandinavia and the Baltics and according LNG bunker potential.

"In addition, the German federal government supports an LNG terminal as it contributes to gas supply diversification and provides efficient supply chains for LNG as an alternative fuel," a spokesperson for the partners said. ■

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Gasum marks *Coralius* 200th LNG bunkering

Finnish state-owned gas company Gasum has completed the 200th ship-to-ship LNG bunkering operation from its vessel *Coralius*.

The bunkering record comes only three years after the vessel was built and took place at the Fayard yard in Odense, Denmark. The vessel was used to refuel ferry operator Fjord Line's ship the *Stavangerfjord*.

"Having been fuelled with fresh LNG, *Stavangerfjord* will return to her regular Stavanger-Bergen-Hirtshals route. And we're very happy to make our 200th bunkering delivery to Fjord Line in particular," Gunnar Helmen, Sales Manager at Gasum, said.

Rapid growth

The rapid uptake of LNG as a marine transport fuel in the Baltic region has propelled the utilisation

rate of the *Coralius*, as the vessel only reached its 100th bunkering in February last year.

"Last year, *Coralius* provided 107 ship-to-ship bunkerings to various customers in locations ranging from Rotterdam to the Gothenburg waters, with the focus being mainly on the latter region," Gasum noted.

Constructed by Royal Bodewes in the Netherlands in 2017, the *Coralius* was the first European-built LNG bunkering and distribution vessel to enter the water. Equipped with a cargo capacity of 5,800 cubic meters, the vessel is outfitted with state-of-the-art LNG transfer equipment.

"We're very happy with the

longstanding relationship with Gasum and the support we've received over the years. We're pioneers in LNG-fuelled cruise ferries on this scale and, as such, not everything works according to plan in the early start-up years. In this context, a professional partner like Gasum makes this transition to a greener maritime world simpler and safer," Richard Ternblom, CEO of Fjord Line, said.

Land-based infrastructure

Stringent pollution legislation in the Baltics has supported the roll-out of new LNG refuelling technology as the *Coralius* now complements a wide array of land-



Gunnar Helmen - Gasum Maritime

based LNG bunkering infrastructure along the Nordic coast.

"We normally supply LNG to *Stavangerfjord* by a loading arm on a regular basis directly from our LNG plant in Risavika. It's great to get this opportunity to supply the cruise ferry with LNG in dock in Denmark," Helmen commented.

Headquartered in Espoo, Finland, Gasum provides integrated gas services across the Nordic region and northern Europe. The firm is also the transmission system operator of the natural gas grid of Finland, a natural gas importer and seller and biogas refiner in Finland and Sweden. ■



MS-Stavangerfjord

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NYK orders second LNG-fuelled PCTC

Japanese shipping line Nippon Yusen Kaisha (NYK) has doubled down on plans to deploy LNG as a fuel in its fleet, announcing its second LNG-fuelled pure car and truck carrier (PCTC).

The vessel will be fabricated by Shin Kurushima Dockyard in Mikawa Bay on Osaka. Delivery is scheduled for 2022.

“NYK has positioned LNG fuel as one of the bridging technologies to realize future zero-emission ships. The company aims to have a clean transportation mode

that will reduce the environmental burden of the entire PCTC fleet,” the company said announcing the contract,” the company said in a statement.

EEDI phase 3 compliant

The news follows rapidly on NYK’s first order for an LNG-fuelled

PCTC in Q3 last year. Both vessels will feature capacity to carry 7,000 car-units and will weigh 73,500 gross-tonnes.

The first vessel is set to be delivered in 2020 and will measure 38 metres in width and just under 200 metres in length. Once complete it will be the first large LNG-powered PCTC built in Japan.

Construction of the new PCTC’s has been supported by Japan’s Ministry of Environment as well as the Ministry of Land, Infrastructure, Transport and Tourism. Both vessels are set to exceed International Maritime Organization (IMO) EEDI phase 3 requirements that are due to enter force in 2025.

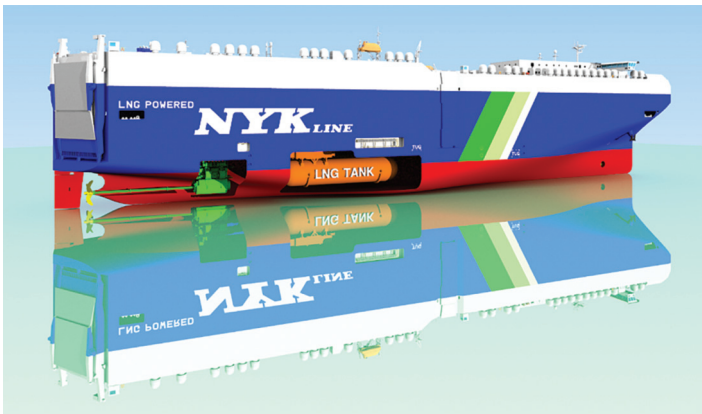
Green bonds support investment

The company’s support for LNG

follows the issuance of the first Green Bonds in the shipping sector by NYK in 2018. The bonds valued at US\$93.5 million have maturity of five years and were launched for the sole purpose of funding environment-friendly projects.

“NYK will participate in a shipping industry working group to be established by the Climate Bonds Initiative and will cooperate in formulating evaluation criteria for Green Bonds issued by shipping companies,” a company spokesperson said.

NYK is one of the world’s largest shipping companies and is headquartered in Chiyoda, Tokyo. The group operates a fleet of 800 ships, including container ships, tankers, bulk carriers, Ro-Ro car carriers, reefer vessels, LNG carrier and cruise ships. ■



Rendition of NYK LNG-fuelled PCTC

MAN Cryo to supply record Wallenius SOL icebreakers

Power system manufacturer MAN Cryo has signed a supply contract with Swedish shipping line Wallenius SOL for the provision of LNG fuel-gas supply systems for two newbuild RoRo vessels.

The vessels are to be built at Yantai Raffles shipyard in China and are expected to reduce fuel consumption per tonne-km by 50% and decrease greenhouse gas emissions per transported unit by up to 60%.

“These RoRos will operate in a sensitive, sulphur-emission-control area in harsh winter conditions where a reliable LNG fuel-gas supply system is of the utmost importance. We are very pleased that both shipyard and shipowner trust us to deliver the fuel-gas supply system for such unique vessels,” Louise Andersson, Head of MAN Cryo, said.

Complete LNG solution

The project will see MAN Cryo deliver two 685 cubic metre vacuum tanks, including tank connection spaces (TCSs) with LNG fuel pumps. The firm will also supply

bunker stations, with a capacity of 500 cubic metres each, as well as automation, emergency shut-down and gas-detection systems.

Parent company MAN Energy Solutions will also supply two 9L28/32DF dual-fuel auxiliary engines.

Each vessel will measure 242 metres in length, with capacity of 5,800 lane metres sailing and top sailing speed of 20 knots. The vessels are scheduled for delivery in 2021 and will be operated by Wallenius SOL, a joint venture between Wallenius Lines and Svenska Orient Linien (SOL).

Largest ice class 1A

Once complete, the vessels will be the largest to ever meet Finnish/Swedish ice class 1A Super standard, ensuring year-round service in the frozen Gulf of Bothnia.

“Under-deck mounted tanks



Graphical rendering of the new RoRo vessel

with air locks allow the amount of fresh air sucked into the tank rooms to be reduced to a minimum. This is an important consideration in the tough winter conditions the ships are set to operate in, where the amount of cold air in the vessels needs to be kept to a minimum,” a

spokesperson for MAN said.

Based in Gothenburg, Sweden, MAN Cryo was formed in 2016 after German manufacturer MAN Diesel & Turbo acquired Swedish industrial firm Cryo. The firm develops and manufactures cryogenic equipment for the storage, distribution and handling of LNG. ■

GAIL delivers Bhubaneswar LNG fuel

National gas utility GAIL India has begun trucking imported LNG from Gujarat to Odisha to meet fuelling demand in the eastern Indian state.

The Indian government has long supported a transition to LNG as fuel of choice for the country's transport sector but lack of infrastructure and pipeline network has hampered efforts. To tackle this issue, specialised cryogenic bullet trucks are now delivering cargoes of the LNG from Dahej in Gujarat to Bhubaneswar in Odisha.

"We started transporting LNG through trucks from Dahej to Bhubaneswar and have broken-even on the business," Ashutosh Karnatak, Managing Director of GAIL, told local news agency PTI.

The current route takes approximately one week to move the LNG from the west coast to the east coast. Upon arrival tankers dock with a recently completed LNG Satellite Station in Bhubaneswar.

"There has been demand from city gas operators in places such as Bhopal and its neighbouring Mandideep, Indore, and Mangalore, where there are no pipelines to take gas, for supplying the fuel in LNG trucks," Karnatak added.

15% target

The move is part of a government strategy to increase the share of natural gas in the country's energy mix, with a target to increase the share to 15% by 2030, up from the current 6.2%.

To support this goal a consortium of Indian energy companies has committed to introduce a network of LNG fuelling stations across the country to support heavy-goods transport growth.

First LNG fuelling station

A part of this push the country's largest LNG importer Petronet has commissioned the country's first LNG fuelling station at the Dahej LNG terminal. The firm simultaneously announced it has launched the first commercial AC bus running on LNG.

"We have installed LNG dispensing stations both at Dahej and Kochi terminals and procured buses to run on LNG as fuel at both locations," the firm said in a statement.

Petronet is collaborating with



GAIL India logo

Indian Oil Corporation and BPCL along with local partners to create a network of LNG refuelling stations that can supply as many as 5,000 LNG-fuelled trucks on five leading national highway systems. Capitalising on the projected growth in LNG supply, the country's Ministry of Shipping also plans to launch a fleet of LNG-fuelled barges and associated infrastructure on the Ganges.

NEWS NUDGES

Equinor secures LNG bunkering supply

Norwegian energy group Equinor has signed a contract to bunker LNG for two dual-fuel powered crude shuttle tankers when they begin operation later this year.

The agreement with Nordic gas specialist Gasum will see bunkering carried out by bunker vessel offshore in Skagen, Denmark, and Mongstad, Norway.

"We are happy to support Equinor in its ambition towards cleaner shipping," Kimmo Rahkamo, vice president at Gasum, commented.

Built by South Korea's Samsung Heavy Industries, the two 123,100-dwt The two shuttle tankers - Eagle Blane and Eagle Balder - are under construction by South Korean Shipyard Samsung Heavy Industries on behalf of AET Sea Shuttle, a joint venture between ADS Shipping and AET Tankers. They will both be chartered by Equinor on a long-term basis.



LNG station in India



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First STS bunkering for LNG cruise ship completed

The first ship-to-ship bunkering of a cruise ship has been carried out by Nordic energy group Gasum, paving the way for wider uptake of the fuel on international routes.

The landmark refuelling operation was carried out at the Meyer Turku shipyard and involved Carnival Corporation's cruise ship *Costa Smeralda* bunkering fuel from Gasum's vessel *Coralius*.

"*Coralius* allows us to perform ship-to-ship bunkering to different types of vessels. We are happy that this now includes a cruise ship. It is always a proud moment when we can deliver our product and make maritime transportation cleaner," Jacob Granqvist, Sales Director, LNG Marine at Gasum, said.

Cleaner in port operation

The number of cruise vessels fuelled by LNG has risen rapidly in recent years, thanks in part to the environmental benefits of the fuel while in port. The majority of cruise vessels spend extended periods in port, often in periods of natural beauty or in areas with restrictive pollution regulations, and so require cleaner burning fuels.

"LNG is the cleanest available marine fuel, and it's rapidly be-

coming the most commonly used alternative to traditional fuels. The use of LNG significantly improves local air quality as well as reducing greenhouse gas emissions by at least 20%, and it meets all the current and forthcoming regulations set out by the International Maritime Organisation and the EU," Gasum notes.

The *Costa Smeralda* is an Excellence-class cruise ship with gross tonnage of 185,010, and the fifth-largest cruise ship in the world as of 2019.

"[*Costa Smeralda*] is an innovation in the cruise and overall shipping industries, destined to mark a step change as it guarantees a significant reduction in our environmental impact [it] is a significant product innovation as well, with Italian hospitality remaining a fundamental and distinctive element of our brand, able to enchant and excite not only new cruise passengers but also more experienced ones," Neil Palomba, President of Costa Cruises, said.



Coralius alongside *Costa Smeralda* for LNG bunkering

Costa Toscana scheduled 2021

The vessel is the first in a series of cruise ships under construction at the Meyer Turku shipyard, all of which will be fitted with LNG propulsion. A sister ship, the *Costa Toscana*, is scheduled for delivery in 2021.

British-American cruise operator, Carnival, has been a strong proponent of LNG, hailing the fuel as the "technology of the future". The group is currently the world's largest travel leisure company,

with 10 cruise line brands and a combined fleet of over 100 vessels.

"We are continuing to pioneer the use of liquefied natural gas (LNG), the world's cleanest fossil fuel, and are expanding our LNG investment.

We began the implementation of our LNG vision by using LNG in port...Leading the cruise industry's use of LNG to power cruise ships, we have a further 10 sister vessels due for delivery between 2019 and 2025," Carnival said in a statement.



Costa Smeralda

Total: LNG up to 30% of global mix by 2050

Rising demand for LNG as a marine transport fuel is expected to drive up its share of the global bunker mix, according to energy giant Total.

As the number of LNG-fuelled vessels on the seas increases, the demand for LNG bunker fuel is expected to skyrocket, reaching 10 million tonnes per annum by 2025, a ten-fold increase from the current level, according to Xavier Pfeuty of Total Marine Fuel

Global Solutions.

“An uptick in LNG investments is being experienced with LNG bunker vessels predicted to triple in the next two years reaching more than 30 units,” Pfeuty notes, adding “Unlocking LNG potential is set to become easier with logisti-

cal and technical improvements elevating bunkering development.”

Large-scale LNG infrastructure

The forecast is driving increased investment from Total as it prepares infrastructure to supply 300,000 tons of LNG per year under contract to container line CMA CGM for nine ultra-large new-build containerships, estimated to be the largest in the world.

“The wider use of LNG as a fuel is an important component of Total’s LNG strategy, and we are delighted to support CMA CGM as it implements this ambitious project,” Patrick Pouyanné, CEO of Total, said.

Total already operates the world’s largest LNG bunker vessel, fitted with innovative tank tech-

nologies, provided by the French company GTT, that allow for capacity of 18,600 cubic meters of LNG.

Pioneering investment

Headquartered in Paris, France, Total is one of the six “Supermajor” oil companies and its drive towards LNG has helped support uptake across the industry. Today the firm is the second-largest private global LNG player, with an overall portfolio of around 40 million tons per year by 2020 and a global market share of 10%.

“Thanks to this pioneering investment, Total is making a positive contribution to the sustainable evolution of global shipping,” wMomar Nguer, President for Total Marketing & Services, said.



Total LNG bunker vessel

Antwerp completes first STS LNG bunkering

Authorities at the Port of Antwerp have announced the successful completion of the first ship-to-ship LNG bunkering operation at the port.

The refuelling procedure was carried out at quay 512 of the SEA-Tank Terminal dock in the Kanaal Dock zone of the port, with fuel supplied by Titan LNG’s *FlexFueler 001*. The bunkering involved refuelling of the *Ramelia* chemical tanker, operated by Swedish Gothia Alliance.

“As the fifth largest bunker port in the world, we want to play a pioneering role in the integration of low-carbon fuels in the bunker market. With this first LNG bunkering in our port, we are again taking an important step in the transition to a multi fuel port,” Jacques Vandermeiren, Port of Antwerp CEO, said.

Low carbon transition

The LNG refuelling operation is part of a strategy by port authorities to develop the site into the leading regional multi-fuel bunkering hub. A sister vessel to the ex-

isting bunker vessel, *FlexFueler 002*, is set to launch at the port later this year and is expected to significantly boost capacity thanks to upgraded technology.

“Port of Antwerp is fully engaged to integrate low carbon fuels in its bunker market. LNG is a reality today. We’ll take care of methanol, hydrogen and electrical power between now and 2025,” a spokesperson for the port authority commented.

FlexFueler 002 is set to utilise quay 526 at the port as its fixed base.

Fluxys partnership

The new vessel is currently under development by Titan LNG and Belgian gas transmission system operator Fluxys and will provide services throughout the Antwerp port and region to inland waterway vessels and small coasters once commissioned.

“Our investment in the Antwerp LNG bunkering pontoon marks our commitment to offer concrete solutions to bring the energy transition forward and improve air quality. The pontoon is yet another link we are adding to the logistics chain in Belgium to make LNG more widely available

as alternative fuel for ships,” Pascal de Buck, CEO of Fluxys, explains.

Titan LNG supplies LNG and natural gas fuel solutions for industrial companies and shipping lines in Europe and is part of Dutch road transport firm IVECO Schouten Group.



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OMV predicts growth in LNG-fuelled road transport

Austrian integrated oil and gas company OMV predicts that LNG fuelling for road transport is set to increase rapidly in Europe, driving infrastructure investment in the continent.

The LNG-fuelled heavy-duty transport sector is set to be one of the main drivers for this growth with energy firm Shell forecasting that the number of vehicles in the segment will rise from 1,532 vehicles in 2016 to 280,000 by 2030.

“We believe that the demand for LNG on the road will grow... Less CO₂ and particulate emissions, as well as less noise, add up to environmentally sound goods transport. This is why we should get on with expanding the requisite infrastructure and supply,” Rainer Steele, CEO of OMV, said.

Fuelling biogas development

In the longer term, OMV predicts an upsurge in commercial vehicles powered by compressed natural gas will compliment LNG infrastructure, creating a critical mass of gas powered vehicles and novel solutions such as liquefied biogas.

“Even better than reducing CO₂ output, of course, is to drive CO₂-neutral - this will be possible in the near future with bio-methane and hydrogen,” Steele commented.



OMV, Snam and TAG representatives

Headquartered in Vienna, OMV is active in both the upstream and downstream sectors and employs over 20,000 staff worldwide.

OMV, Snam, TAG sign MoU

Furthering the company's aim to develop CO₂-neutral solutions, OMV signed a memorandum of understanding with Italian gas utility Snam and gas distribution

company TAG to prototype new liquefaction and LNG supply infrastructure in Austria.

“Gas is the most immediate solution for reducing pollution from fine dust and CO₂ emissions from light and heavy transportation and also has great potential in maritime and rail transport. Additionally, thanks to biomethane and bio-LNG, it is gradually becoming renewable, paving the way for further decarbonisation of transport,” Marco Alverà, CEO of Snam, commented.

The three-way agreement covers plans to jointly investigate ‘potential opportunities in the field of sustainable LNG mobility’ in Austria. This includes construction of a small-scale LNG liquefaction plant, the framework for a later LNG supply agreement, and the development of a LNG market.

“Our cooperation with OMV and our associate TAG is aimed at boosting sustainable natural gas mobility in Austria, building on an already successful experience. Italy has the largest number of both CNG (over 1,300) and LNG (over 50) distributors in Europe and Snam is investing to further strengthen the network for both cars and trucks,” Alverà added. ■

NEWS NUDGE

Fratelli Cosulich plans LNG push

Family-owned bunkering firm Fratelli Cosulich has announced plans to expand with the addition of a fleet of new bunker tankers.

The firm currently has physical supply operations in Singapore and trading offices in Dubai, Singapore, Vietnam, Hong Kong, Italy, Monaco and New York.

“We will soon announce a new location where we will be physical suppliers with a fleet of six (owned and operated) tankers,” Cosulich said, adding that the firm expects “the new physical supply location to be up and running by the end of Q1 2020”.

The firm has given no details on the fuel the fleet will supply but is considering a move into the LNG bunker market, with Cosulich stating that the firm is “actively looking into” LNG trading and bunkering and plans “to make our first investment soon”. ■



OMV Gas facility

ICCT study suggests LNG impacts

New analysis from the International Council on Clean Transportation (ICCT) suggests more must be done by transport operators using LNG, in order to combat gas leakage and prevent climate impacts.

The findings were published as part of detailed life-cycle greenhouse gas emissions analysis of LNG as a marine transport fuel and highlight several climate implications for widespread use of the fuel.

“More and more ships, including container ships and cruise ships, are being built to run on

LNG, which emits approximately 25% less CO₂ than conventional marine fuels in providing the same amount of propulsion power. However, LNG is mostly methane, a potent greenhouse gas that traps 86 times more heat in the atmosphere than the same amount of CO₂ over a 20-year time period,” Bryan Comer, Senior Marine

Researcher at the ICCT, said.

Leakage

The ICCT’s research shows a huge potential for small changes in leakage throughout the lifecycle to impact overall global warming. Analysis of upstream emissions from leakage during extraction, processing, and transport and downstream emissions were combined with estimates for leakage during combustion and release of unburned methane after use.

Comparison of low-pressure dual fuel (LPDF), medium-speed, four-stroke with LPDF slow-speed-two-stroke, and HPDF slow-speed-two-stroke, showed that this technology emitted 70% to 82% more life-cycle GHGs than marine gas oil

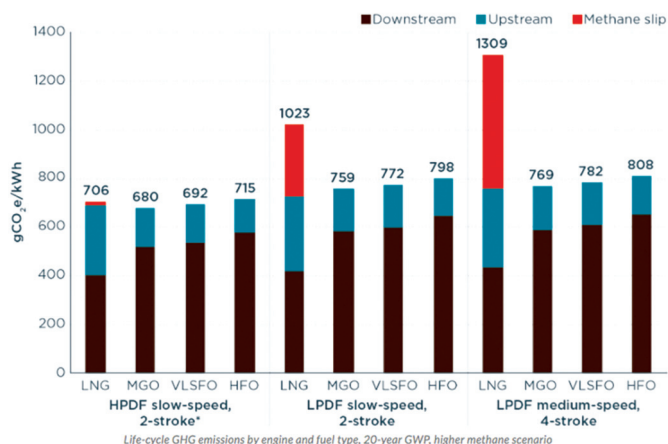
“The most popular type of LNG engine is also the leakiest unfortunately,” Comer explained.

100-year global warming potentials

The report’s authors utilized a representative life-cycle emission factor as well as the 100-year and 20-year global warming potentials (GWPs) for methane included in the Intergovernmental Panel on Climate Change’s Fifth Assessment Report.

Headquartered in Washington D.C., the ICCT is an independent non-profit organization focused on environmental performance and energy efficiency research for the road, marine, and air transportation sectors.

“The IMO has signalled that it will regulate GHGs under its initial GHG strategy and continued investment in LNG infrastructure on ships and on shore risks making it harder to transition to zero-emission vessels in the future,” the ICCT concluded.



Credit- ICCT

EIB finances Eastern Mediterranean’s first LNG bunker vessel

The European Investment Bank (EIB) has signed a finance agreement with Public Gas Corporation of Greece (DEPA) for the construction of a new LNG bunkering vessel, the first in the Eastern Mediterranean.

The ground-breaking finance deal will provide up to €20 million in funds for the fabrication of an LNG vessel with capacity for 3,000 cubic metres of fuel.

“The new financing from the EIB, the largest investment arm of Europe, is yet one more vote of confidence to the growth prospects of the Greek economy and confirms the significant improvement of the investment climate,” DEPA director, Ioannis Papadopoulos, commented.

Revithoussa LNG terminal

Once operational the new vessel will be bunkered at Revithoussa LNG terminal and will refuel ships at the country’s main port in Piraeus as well as smaller ports across the country and the wider region.

“The European Investment Bank is pleased to work with DEPA to support our shared goals of enabling Green Shipping in Greek and international waters. The new EIB financed vessel will provide an alternative fuel for ships in the Aegean and Eastern Mediterranean,” Andrew McDowell, EIB Vice-President, said.

EFSl guaranteed

The loan finance will be guaranteed by the European Fund for Strategic Investments and is expected to cover half of the vessel’s construction cost.

DEPA also announced it has secured an additional amount of €8.9 million from the European Union under the BlueHUBS initiative, as part of a wider strategy to expand the use of LNG in maritime transport in the eastern Mediterranean.



DEPA and EIB representatives at signing ceremony

“The new vessel... represents one more decisive step in DEPA’s efforts to expand the use of LNG in maritime transport in the eastern Mediterranean, thus creating an integrated and efficient LNG

supply chain... contributing to the protection of the environment and improving the competitiveness of Greek shipping and the ports of our country,” Konstantinos Xifaras, CEO of DEPA, said.

Powering the Future Through LNG



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Chart Industries joins SEA\LNG Coalition

Cross-sector coalition SEA\LNG has expanded its membership with the addition of specialist equipment provider, Chart Industries.

The new member brings a breadth of experience in the manufacture of equipment for LNG systems with capabilities across small-scale LNG for transportation, marine and power generation.

"We are thrilled to welcome another member from North America. Chart is a highly respected equipment and solution provider working across the LNG value chain and we look forward to working together with a company that is at the heart of the energy revolution," Peter Keller, SEA\LNG chairman, said.

Contributing to a cleaner future

Chart built its first bunkering station in 2003 and more recently has notably completed LNG terminals in Klaipeda and Jacksonville, Florida. The company's fuel systems are also employed on multiple LNG-fuelled vessels, such as the Francisco high speed ferry and various fleets of barges.

"As members of SEA\LNG, we expect to further enhance LNG as a commercially viable and environmentally sound marine fuel for 2020 and beyond, while contributing to a cleaner future for the communities in which our equipment and solutions are used," Jill



Chart Industries facility

Evanko, CEO of Chart, said.

Headquartered in the US, Chart Industries' product portfolio covers the entire liquid gas supply chain from production, storage, distribution and end-use of LNG to atmospheric, hydrocarbon, and other industrial gases.

39 members worldwide

The addition of the Chart to SEA\LNG's growing coalition, brings its membership list to 39,

with participants spanning the entire LNG value chain.

SEA\LNG members include: ABS, Carnival, Chart Industries, Clean Marine Energy, DNV GL, Eagle LNG Partners, ÉNESTAS, Exeno Yamamizu, Fearnleys, FortisBC, Gasum, GE, GTT, JAX LNG, Keppel Gas Technology, "K" LINE, Lloyd's Register, MAN Energy Solutions, Maritime and Port Authority of Singapore, Marubeni, Mitsubishi, Mitsui & Co., Naturgy, Novatek Gas

& Power, NYK Line, Port of Rotterdam, Port of Virginia, Qatargas, Shell, Société Générale, Stabilis Energy, Sumitomo Corporation, Total, TOTE, Toyota Tsusho, Uyeno Group of Companies, Vancouver Fraser Port Authority, Wärtsilä, and Yokohama-Kawasaki International Port Corporation.

Registered in the UK, the SEA\LNG consortium is a not-for-profit collaborative industry foundation.

The whole LNG Market at your fingertips

- Increased market visibility through a quick "lowdown of the market" on Monday morning and detailed "bird's eye" view of the past month
- Break-down and illustration of complex LNG trade relations backed by real data to increase feel for the market
- Access to pre-digested primary market data
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LNG Unlimited

LNG Market Stats 2018
From 1st May 2018

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LNG-FUELLED SHIPS IN OPERATION WORLDWIDE + NEW ORDERS

Year of delivery	Project type	Ship name	Ship type	Shipowner	Area of operation	Class
2000	Newbuild	Glutra	Car/Passenger ferries	Fjord1	Norway	DNV GL
2003	Newbuild	Viking Energy	Offshore supply ships	Eidesvik Shipping	Norway	DNV GL
2003	Newbuild	Stril Pioneer	Offshore supply ships	Simon Møkster	Norway	DNV GL
2006	Newbuild	Bergensfjord	Car/Passenger ferries	Fjord1	Norway	DNV GL
2007	Newbuild	Stavangerfjord	Car/Passenger ferries	Fjord1	Norway	DNV GL
2007	Newbuild	Raunefjord	Car/Passenger ferries	Fjord1	Norway	DNV GL
2007	Newbuild	Mastrafjord	Car/Passenger ferries	Fjord1	Norway	DNV GL
2007	Newbuild	Fanafjord	Car/Passenger ferries	Fjord1	Norway	DNV GL
2008	Newbuild	Viking Queen	Offshore supply ships	Eidesvik Shipping	Norway	DNV GL
2009	Newbuild	Viking Lady	Offshore supply ships	Eidesvik Shipping	Norway	DNV GL
2009	Newbuild	Prinsen	Car/Passenger ferries	Norled	Norway	DNV GL
2009	Newbuild	Moldefjord	Car/Passenger ferries	Fjord1	Norway	DNV GL
2009	Newbuild	Kongen	Car/Passenger ferries	Norled	Norway	DNV GL
2009	Newbuild	Dronningen	Car/Passenger ferries	Norled	Norway	DNV GL
2009	Newbuild	Barentshav	Other activities	Remøy Management	Norway	DNV GL
2010	Newbuild	Sortland	Other activities	Remøy Management	Norway	DNV GL
2010	Newbuild	Selbjørnsfjord	Car/Passenger ferries	Fosen Namsos Sjø	Norway	DNV GL
2010	Newbuild	Romsdalsfjord	Car/Passenger ferries	Fjord1	Norway	DNV GL
2010	Newbuild	Korsfjord	Car/Passenger ferries	Fjord1	Norway	DNV GL
2010	Newbuild	Fannefjord	Car/Passenger ferries	Fjord1	Norway	DNV GL
2010	Newbuild	Bergen	Other activities	Remøy Management	Norway	DNV GL
2011	Retrofit	Bit Viking	Oil/Chemical tankers	Tarbit Shipping	Norway	DNV GL
2011	Newbuild	Skandi Gamma	Offshore supply ships	DOF	Norway	DNV GL
2011	Newbuild	Normand Arctic	Offshore supply ships	Solstad Rederi	Norway	DNV GL
2011	Newbuild	Boknafjord	Car/Passenger ferries	Fjord1	Norway	DNV GL
2012	Retrofit	Tresfjord	Car/Passenger ferries	Fjord1	Norway	DNV GL
2012	Newbuild	Viking Princess	Offshore supply ships	Eidesvik Shipping	Norway	DNV GL
2012	Newbuild	Viking Prince	Offshore supply ships	Eidesvik Shipping	Norway	DNV GL
2012	Newbuild	Værøy	Car/Passenger ferries	Torghatten Nord	Norway	DNV GL
2012	Newbuild	Olympic Energy	Offshore supply ships	Olympic Shipping	Norway	DNV GL
2012	Newbuild	Landegode	Car/Passenger ferries	Torghatten Nord	Norway	DNV GL
2012	Newbuild	Island Crusader	Offshore supply ships	Island Offshore	Norway	DNV GL
2012	Newbuild	Island Contender	Offshore supply ships	Island Offshore	Norway	DNV GL
2012	Newbuild	Høydal	General cargo ships	Nordnorsk Shipping	Norway	DNV GL
2012	Newbuild	Barøy	Car/Passenger ferries	Torghatten Nord	Norway	DNV GL
2013	Newbuild	Viking Grace	RoPax	Viking Line	Europe	LR
2013	Newbuild	Stavangerfjord	RoPax	Fjordline	Norway	DNV GL
2013	Newbuild	Ryfylke	Car/Passenger ferries	Norled	Norway	DNV GL
2013	Newbuild	REM Leader	Offshore supply ships	REM	Norway	DNV GL
2013	Newbuild	Lødingen	Car/Passenger ferries	Torghatten Nord	Norway	DNV GL
2013	Newbuild	Hardanger	Car/Passenger ferries	Norled	Norway	DNV GL
2013	Newbuild	Hai Yang Shi You 522	Tugs	CNOOC	Asia	CCS
2013	Newbuild	Hai Yang Shi You 521	Tugs	CNOOC	Asia	CCS
2013	Newbuild	Francisco	Car/Passenger ferries	Buquebus	America	DNV GL
2013	Newbuild	Eidsvaag Pioneer	General cargo ships	Eidsvaag	Norway	DNV GL
2013	Newbuild	Econuri	Other activities	Incheon Port Authority	Asia	KR
2014	Newbuild	With Marine	General cargo ships	Egil Ulvan Rederi	Norway	DNV GL
2014	Newbuild	With Harvest	General cargo ships	Egil Ulvan Rederi	Norway	DNV GL
2014	Newbuild	Turva	Other activities	Finnish Border Guard	Europe	DNV GL
2014	Newbuild	Siem Symphony	Offshore supply ships	Siem Offshore	Norway	DNV GL
2014	Newbuild	Rem Eir	Offshore supply ships	Remøy Shipping	Norway	DNV GL
2014	Newbuild	Coral Sticho	Gas tankers	Anthony Veder	Europe	BV
2014	Newbuild	Coral Star	Gas tankers	Anthony Veder	Europe	BV
2014	Newbuild	Borgøy	Tugs	Buksér & Berging	Norway	DNV GL
2014	Newbuild	Bokn	Tugs	Buksér & Berging	Norway	DNV GL

Year of delivery	Project type	Ship name	Ship type	Shipowner	Area of operation	Class
2014	Newbuild	Bergensfjord	RoPax	Fjordline	Norway	DNV GL
2015	Retrofit	Ostfriesland	Car/Passenger ferries	AG EMS	Europe	DNV GL
2015	Retrofit	Fure West	Oil/Chemical tankers	Furetank Rederi	Europe	BV
2015	Retrofit	Bergen Viking	Oil/Chemical tankers	Bergen Tankers	Norway	LR
2015	Newbuild	Stril Barents	Offshore supply ships	Simon Møkster Shipping	Norway	DNV GL
2015	Newbuild	Siem Pride	Offshore supply ships	Siem Offshore	Norway	DNV GL
2015	Newbuild	Sefarina	Gas tankers	Chemgas Shipping	Europe	BV
2015	Newbuild	Sakigake	Tugs	NYK	Asia	NK
2015	Newbuild	Prinsesse Isabella	Car/Passenger ferries	Samsøe municipality	Europe	DNV GL
2015	Newbuild	Perla del Caribe	Container ships	TOTE Shipholdings	America	ABS
2015	Newbuild	Kvitnos	Ro-Ro cargo ships	Nor Lines	Norway	DNV GL
2015	Newbuild	Kvitbjørn	Ro-Ro cargo ships	Nor Lines	Norway	DNV GL
2015	Newbuild	JS Ineos Intrepid	Gas tankers	Evergas	Global	BV
2015	Newbuild	JS Ineos Insight	Gas tankers	Evergas	Global	BV
2015	Newbuild	JS Ineos Ingenuity	Gas tankers	Evergas	Global	BV
2015	Newbuild	Helgoland	Car/Passenger ferries	AG EMS	Europe	DNV GL
2015	Newbuild	Harvey Power	Offshore supply ships	Harvey Gulf International Marine	America	ABS
2015	Newbuild	Harvey Energy	Offshore supply ships	Harvey Gulf International Marine	America	ABS
2015	Newbuild	Hai Yang Shi You 525	Tugs	CNOOC	Asia	CCS
2015	Newbuild	Greenland	Bulk carriers	Erik Thun	Europe	LR
2015	Newbuild	F.A. Gauthier	Car/Passenger ferries	Society of Quebec ferries	America	LR
2016	Newbuild	Ternsund	Oil/Chemical tankers	Terntank	Norway	BV
2016	Newbuild	Ternfjord	Oil/Chemical tankers	Terntank	Norway	BV
2016	Newbuild	Tern Sea	Oil/Chemical tankers	Terntank	Europe	BV
2016	Newbuild	Sundowner	Gas tankers	Chemgas Shipping	Europe	BV
2016	Newbuild	Siem Thiima	Offshore supply ships	Siem Offshore	Oceania	DNV GL
2016	Newbuild	Seaspan Swift	Car/Passenger ferries	Seaspan Ferries Corporation	America	BV
2016	Newbuild	Searoad Mersey II	Ro-Ro cargo ships	Searoad Holdings	Oceania	DNV GL
2016	Newbuild	Salish Orca	Car/Passenger ferries	BC Ferries	America	LR
2016	Newbuild	Polaris	Other activities	Arctia Shipping	Europe	LR
2016	Newbuild	Navigator Eclipse	Gas tankers	Navigator Gas	Global	ABS
2016	Newbuild	JS Ineos Inspiration	Gas tankers	Evergas	Global	BV
2016	Newbuild	Js Ineos Innovation	Gas tankers	Evergas	Global	BV
2016	Newbuild	Isla Bella	Container ships	TOTE Shipholdings	America	ABS
2016	Newbuild	Ireland	Bulk carriers	Erik Thun	Europe	LR
2016	Newbuild	Hasvik	Car/Passenger ferries	Boreal Transport Nord	Norway	DNV GL
2016	Newbuild	Harvey Liberty	Offshore supply ships	Harvey Gulf International Marine	America	ABS
2016	Newbuild	Hai Yang Shi You 526	Tugs	CNOOC	Asia	CCS
2016	Newbuild	Bergsfjord	Car/Passenger ferries	Boreal Transport Nord	Norway	DNV GL
2016	Newbuild	Auto Energy	Car carriers	UECC	Europe	DNV GL
2016	Newbuild	Auto Eco	Car carriers	UECC	Europe	DNV GL
2017	Retrofit	Wes Amelie	Container ships	Wessels Reederei	Europe	BV
2017	Retrofit	Abel Matutes	RoPax	Baleària	Europe	BV
2017	Newbuild	Tern Ocean	Oil/Chemical tankers	Terntank	Europe	BV
2017	Newbuild	Seaspan Reliant	Car/Passenger ferries	Seaspan Ferries Corporation	America	BV
2017	Newbuild	Scheldt River	Other activities	DEME	Europe	BV
2017	Newbuild	Salish Raven	Car/Passenger ferries	BC Ferries	America	LR
2017	Newbuild	Salish Eagle	Car/Passenger ferries	BC Ferries	America	LR
2017	Newbuild	Pax	Tugs	Østensjø Rederi	Norway	BV
2017	Newbuild	Navigator Prominence	Gas tankers	Navigator Gas	Global	ABS
2017	Newbuild	Navigator Nova	Gas tankers	Navigator Gas	Global	ABS
2017	Newbuild	Minerva	Other activities	DEME	Europe	BV
2017	Newbuild	Mia Desgagnés	Oil/Chemical tankers	Groupe Desgagnés	America	BV
2017	Newbuild	Megastar	RoPax	Tallink	Europe	BV
2017	Newbuild	JS Ineos Invention	Gas tankers	Evergas	Global	BV

Year of delivery	Project type	Ship name	Ship type	Shipowner	Area of operation	Class
2017	Newbuild	JS Ineos Intuition	Gas tankers	Evergas	Global	BV
2017	Newbuild	Js Ineos Independence	Gas tankers	Evergas	Global	BV
2017	Newbuild	Harvey Freedom	Offshore supply ships	Harvey Gulf International Marine	America	ABS
2017	Newbuild	Gaschem Orca	Gas tankers	Ocean Yield	Global	DNV GL
2017	Newbuild	Gaschem Beluga	Gas tankers	Ocean Yield	Global	DNV GL
2017	Newbuild	Dux	Tugs	Østensjø Rederi	Norway	BV
2017	Newbuild	Damia Desgagnés	Oil/Chemical tankers	Groupe Desgagnés	Global	BV
2017	Newbuild	Audax	Tugs	Østensjø Rederi	Norway	BV
2018	Retrofit	Spirit of British Columbia	Car/Passenger ferries	BC Ferries	America	ABS
2018	Newbuild	Visborg	RoPax	Rederi AB Gotland	Europe	DNV GL
2018	Newbuild	Viikki	Bulk carriers	ESL Shipping	Europe	DNV GL
2018	Newbuild	Thun Venern	Oil/Chemical tankers	Thun Tankers	Europe	BV
2018	Newbuild	Thun Eos	Oil/Chemical tankers	Thun Tankers	Europe	BV
2018	Newbuild	Taíno	Container ships	Crowley Maritime Corporation	America	DNV GL
2018	Newbuild	Paul A. Desgagnés	Oil/Chemical tankers	Groupe Desgagnés	America	BV
2018	Newbuild	Nyksund	General cargo ships	Nordnorsk Shipping	Norway	DNV GL
2018	Newbuild	Mendeleev Prospect	Crude oil tankers	SCF	Europe	DNV GL
2018	Newbuild	Maju Loyalty	Tugs	Maju Maritime (Boskalis)	Asia	ABS
2018	Newbuild	Lomonosov Prospect	Crude oil tankers	SCF	Europe	DNV GL
2018	Newbuild	Livingstone	Other activities	DEME Tideway	Europe	DNV GL
2018	Newbuild	KST Liberty	Tugs	Keppel Smit Towage (Boskalis)	Asia	ABS
2018	Newbuild	Ilshin Green Iris	Bulk carriers	Ilshin	Asia	LR
2018	Newbuild	Harvey America	Offshore supply ships	Harvey Gulf International Marine	America	ABS
2018	Newbuild	Haaga	Bulk carriers	ESL Shipping	Europe	DNV GL
2018	Newbuild	Gaia Desgagnés	Oil/Chemical tankers	Groupe Desgagnés	America	BV
2018	Newbuild	Gagarin Prospect	Crude oil tankers	SCF	Europe	DNV GL
2018	Newbuild	Fure Valö	Oil/Chemical tankers	Furetank Rederi	Europe	BV
2018	Newbuild	Elio	Car/Passenger ferries	Caronte & Tourist	Europe	RINA
2018	Newbuild	El Coquí	Container ships	Crowley Maritime Corporation	America	DNV GL
2018	Newbuild	Ecodelta	Other activities	van der Kamp	Europe	DNV GL
2018	Newbuild	Containerships Nord	Container ships	Containerships	Europe	ABS
2018	Newbuild	Armand-Imbeau II	Car/Passenger ferries	Society of Quebec ferries	America	LR
2018	Newbuild	Aidanova	Cruise ships	Aida Cruises	Global	RINA
2019	Retrofit	Spirit of Vancouver Island	Car/Passenger ferries	BC Ferries	America	ABS
2019	Retrofit	Samuel de Champlain	Other activities	Dragages-Ports	Europe	BV
2019	Retrofit	Napoles	RoPax	Baleària	Europe	RINA
2019	Newbuild	Vernadsky Prospect	Crude oil tankers	SCF	Europe	DNV GL
2019	Newbuild	Thun Evolve	Oil/Chemical tankers	Thun Tankers	Europe	BV
2019	Newbuild	TBN 1	Tugs	Ningbo Zhoushan Port Co.	Asia	CSS
2019	Newbuild	Sleipnir	General cargo ships	Heerema Offshore Services	Global	LR
2019	Newbuild	Shetland	Bulk carriers	Erik Thun	Europe	LR
2019	Newbuild	Samuel Prospect	Crude oil tankers	SCF	Europe	DNV GL
2019	Newbuild	Samnøy	Car/Passenger ferries	Torghatten	Norway	DNV GL
2019	Newbuild	Rossi A. Desgagnés	Oil/Chemical tankers	Groupe Desgagnés	America	BV
2019	Newbuild	Ramelia	Oil/Chemical tankers	Älvtank	Europe	BV
2019	Newbuild	Ramanda	Oil/Chemical tankers	Älvtank	Europe	BV
2019	Newbuild	PSA Oak	Tugs	PSA Marine	Asia	BV
2019	Newbuild	PSA Aspen	Tugs	PSA Marine	Asia	BV
2019	Newbuild	Orion	Other activities	DEME	Europe	DNV GL
2019	Newbuild	Marie Curie	RoPax	Baleària	Europe	Unknown
2019	Newbuild	Lysøy	Car/Passenger ferries	Torghatten	Norway	DNV GL
2019	Newbuild	Korolev Prospect	Crude oil tankers	SCF	Europe	DNV GL
2019	Newbuild	Jos-Deschenes II	Car/Passenger ferries	Society of Quebec ferries	America	LR
2019	Newbuild	Ishin	Tugs	Mitsui O.S.K. Lines	Asia	Not classed
2019	Newbuild	Hypatia de Alejandria	RoPax	Baleària	Europe	RINA

Year of delivery	Project type	Ship name	Ship type	Shipowner	Area of operation	Class
2019	Newbuild	Huftarøy	Car/Passenger ferries	Torghatten	Norway	DNV GL
2019	Newbuild	Fure Ven	Oil/Chemical tankers	Furetank Rederi	Europe	BV
2019	Newbuild	Flatøy	Car/Passenger ferries	Torghatten	Norway	DNV GL
2019	Newbuild	Færøy	Car/Passenger ferries	Torghatten	Norway	DNV GL
2019	Newbuild	Eagle Brasilia	Crude oil tankers	AET	Global	ABS
2019	Newbuild	Eagle Bintulu	Crude oil tankers	AET	Global	ABS
2019	Newbuild	Costa Smeralda	Cruise ships	Costa Crociere	Global	RINA
2019	Newbuild	Containerships Polar	Container ships	Containerships	Europe	ABS
2019	Newbuild	Containerships Aurora	Container ships	Containerships	Europe	ABS
2019	Newbuild	Containerships Arctic	Container ships	Containerships	Europe	ABS
2020	Newbuild	Atair	Other activities	German Transport Ministry	Europe	DNV GL
2020	Newbuild	Aurora Spirit	Crude oil tankers	Teekay	Global	DNV GL
2020	Newbuild	Brodosplit 476	Container ships	Brodosplit Shipping Company	Europe	DNV GL
2020	Newbuild	Brodosplit 477	Container ships	Brodosplit Shipping Company	Europe	DNV GL
2020	Newbuild	Current Spirit	Crude oil tankers	Teekay	Global	DNV GL
2020	Newbuild	Carnival Mardi Gras	Cruise ships	Carnival Corporation	Global	RINA
2020	Newbuild	Eagle Blane	Crude oil tankers	AET	Global	DNV GL
2020	Newbuild	Elemaryteyah	Tugs	Drydocks World	Middle East	Tasneef
2020	Newbuild	Ferus smit 451	Oil/Chemical tankers	Thun Tankers	Europe	BV
2020	Newbuild	Ferus smit 452	Oil/Chemical tankers	Thun Tankers	Europe	BV
2020	Newbuild	George III	Container ships	Pasha Hawaii	America	ABS
2020	Newbuild	Greenports 1	Other activities	Bremenports	Europe	DNV GL
2020	Newbuild	Glen Sannox	Car/Passenger ferries	Clyde and Hebrides Ferry Service	Europe	LR
2020	Newbuild	H8563	Offshore supply ships	Viking Supply Ships	Norway	DNV GL
2020	Newbuild	Harvey Patriot	Offshore supply ships	Harvey Gulf International Marine	America	ABS
2020	Newbuild	Janet Marie	Container ships	Pasha Hawaii	America	ABS
2020	Newbuild	Honfleur	RoPax	Brittany Ferries	Europe	BV
2020	Newbuild	L'Ostrea	Other activities	Dragages-Ports	Europe	BV
2020	Newbuild	Libas	Fishing vessels	Liegruppen	Norway	Unknown
2020	Newbuild	Marine Vicky	Oil/Chemical tankers	Sinanju Tankers	Asia	BV
2020	Newbuild	Oddrun With	General cargo ships	Egil Ulvan Rederi	Norway	--
2020	Newbuild	Rainbow Spirit	Crude oil tankers	Teekay	Global	DNV GL
2020	Newbuild	Samsung 2237	Crude oil tankers	AET	Global	DNV GL
2020	Newbuild	Samsung 2286	Crude oil tankers	Teekay	Global	DNV GL
2020	Newbuild	Siem Confucius	Car carriers	Siem Car Carriers	Global	ABS
2020	Newbuild	Spartacus	Other activities	DEME	Europe	BV
2020	Newbuild	TBN	General cargo ships	SeOil Agency/Gas Entec	Global	Unknown
2020	Newbuild	TBN 1	Car carriers	K Line	Global	DNV GL
2020	Newbuild	TBN 1	Car carriers	NYK	Global	DNV GL/NK
2020	Newbuild	TBN 1	Car carriers	Siem Car Carriers	Global	ABS
2020	Newbuild	TBN 1	Container ships	Brodosplit Shipping Company	Europe	DNV GL
2020	Newbuild	TBN 1	Container ships	CMA CGM	Global	BV
2020	Newbuild	TBN 1	Container ships	Eastern Pacific Shipping	Global	LR
2020	Newbuild	TBN 1	Cruise ships	P&O Cruises	Global	RINA
2020	Newbuild	TBN 1	Fishing vessels	Nordlaks	Norway	DNV GL
2020	Newbuild	TBN 1	General cargo ships	Spliethoff/Bore	Europe	--
2020	Newbuild	TBN 1	Oil/Chemical tankers	Furetank Rederi	Europe	--
2020	Newbuild	TBN 1	Oil/Chemical tankers	TB Marine	Global	--
2020	Newbuild	TBN 10	Container ships	CMA CGM	Global	BV
2020	Newbuild	TBN 11	Container ships	CMA CGM	Global	BV
2020	Newbuild	TBN 12	Container ships	CMA CGM	Global	BV
2020	Newbuild	TBN 13	Container ships	CMA CGM	Global	BV
2020	Newbuild	TBN 14	Container ships	CMA CGM	Global	BV
2020	Newbuild	TBN 2	Container ships	Brodosplit Shipping Company	Europe	DNV GL
2020	Newbuild	TBN 2	Container ships	CMA CGM	Global	BV

Year of delivery	Project type	Ship name	Ship type	Shipowner	Area of operation	Class
2020	Newbuild	TBN 2	Container ships	Eastern Pacific Shipping	Global	LR
2020	Newbuild	TBN 2	General cargo ships	Spliethoff/Bore	Europe	--
2020	Newbuild	TBN 2	Oil/Chemical tankers	TB Marine	Global	--
2020	Newbuild	TBN 3	Container ships	CMA CGM	Global	BV
2020	Newbuild	TBN 4	Container ships	CMA CGM	Global	BV
2020	Newbuild	TBN 5	Container ships	Containerships	Europe	ABS
2020	Newbuild	TBN 6	Container ships	CMA CGM	Global	BV
2020	Newbuild	TBN 6	Container ships	Containerships	Europe	ABS
2020	Newbuild	TBN 7	Container ships	CMA CGM	Global	BV
2020	Newbuild	TBN 9	Container ships	CMA CGM	Global	BV
2020	Newbuild	TBN 8	Container ships	CMA CGM	Global	BV
2020	Newbuild	TBN High Speed Catamaran	Car/Passenger ferries	Baleària	Europe	BV
2020	Newbuild	Thjelvar	RoPax	Rederi AB Gotland	Europe	DNV GL
2020	Newbuild	Tide Spirit	Crude oil tankers	Teekay	Global	DNV GL
2020	Newbuild	Viking Glory	RoPax	Viking Line	Europe	DNV GL
2020	Newbuild	Willem Barentsz	Car/Passenger ferries	Royal Doeksen	Europe	LR
2020	Newbuild	Willem De Vlamingh	Car/Passenger ferries	Royal Doeksen	Europe	LR
2020	Retrofit	Bencomo Express	Car/Passenger ferries	Fred. Olsen	Europe	DNV GL
2020	Retrofit	Kong Harald	Cruise ships	Hurtigruten	Norway	DNV GL
2020	Retrofit	Nordkapp	Cruise ships	Hurtigruten	Norway	DNV GL
2020	Retrofit	Nordnorge	Cruise ships	Hurtigruten	Norway	DNV GL
2020	Retrofit	Sajir	Container ships	UASC	Global	DNV GL
2020	Retrofit	Sicilia	RoPax	Baleària	Europe	RINA
2021	Newbuild	Aidacosma	Cruise ships	Aida Cruises	Global	RINA
2021	Newbuild	Costa	Cruise ships	Costa Crociere	Global	RINA
2021	Newbuild	H8564	Offshore supply ships	Viking Supply Ships	Norway	DNV GL
2021	Newbuild	Havila Polaris	Cruise ships	Havila Kystruten	Norway	DNV GL
2021	Newbuild	Havila Pollux	Cruise ships	Havila Kystruten	Norway	--
2021	Newbuild	Le Commandant Charcot	Cruise ships	Ponant	Global	BV
2021	Newbuild	Salamanca	RoPax	Brittany Ferries	Europe	DNV GL
2021	Newbuild	Samsung 2287	Crude oil tankers	Teekay	Global	DNV GL
2021	Newbuild	TBN 1	Bulk carriers	Eastern Pacific Shipping	Global	ABS
2021	Newbuild	TBN 1	Bulk carriers	H-Line	Global	DNV GL/KR
2021	Newbuild	TBN 1	Car carriers	UECC	Global	DNV GL
2021	Newbuild	TBN 1	Car/Passenger ferries	Seaspan Ferries	America	BV
2021	Newbuild	TBN 1	Crude oil tankers	Cosco Shipping Energy Transportation	Global	CSS
2021	Newbuild	TBN 1	Crude oil tankers	Rosneft	Europe	RS
2021	Newbuild	TBN 1	Crude oil tankers	Sinokor/Shell	Global	BV
2021	Newbuild	TBN 1	Cruise ships	Havila Kystruten	Norway	DNV GL
2021	Newbuild	TBN 1	Cruise ships	Disney Cruise Lines	Global	LR
2021	Newbuild	TBN 1	General cargo ships	Spliethoff/Wijnne Barends	Europe	--
2021	Newbuild	TBN 1	Offshore supply ships	COSL	Asia	CSS
2021	Newbuild	TBN 1	Oil/Chemical tankers	Donsötank	Global	--
2021	Newbuild	TBN 1	Oil/Chemical tankers	JP Morgan/Shell	Europe	LR
2021	Newbuild	TBN 1	Oil/Chemical tankers	Terntank	Europe	--
2021	Newbuild	TBN 1	RoPax	TT Line Co Pty Ltd	Oceania	LR
2021	Newbuild	TBN 1	Other activities	Van Oord	Global	BV
2021	Newbuild	TBN 1	Ro-Ro cargo ships	Wallenius SOL	Europe	LR
2021	Newbuild	TBN 10	Container ships	Eastern Pacific Shipping	Global	LR
2021	Newbuild	TBN 10	Crude oil tankers	Sinokor/Shell	Global	BV
2021	Newbuild	TBN 10	Offshore supply ships	COSL	Asia	CSS
2021	Newbuild	TBN 11	Container ships	Eastern Pacific Shipping	Global	DNV GL
2021	Newbuild	TBN 11	Offshore supply ships	COSL	Asia	CSS
2021	Newbuild	TBN 12	Container ships	Eastern Pacific Shipping	Global	DNV GL
2021	Newbuild	TBN 12	Offshore supply ships	COSL	Asia	CSS

Year of delivery	Project type	Ship name	Ship type	Shipowner	Area of operation	Class
2021	Newbuild	TBN 13	Container ships	Eastern Pacific Shipping	Global	DNV GL
2021	Newbuild	TBN 2	Bulk carriers	H-Line	Global	DNV GL/KR
2021	Newbuild	TBN 2	Bulk carriers	Eastern Pacific Shipping	Global	ABS
2021	Newbuild	TBN 2	Car carriers	UECC	Global	DNV GL
2021	Newbuild	TBN 2	Car/Passenger ferries	Clyde and Hebrides Ferry Service	Europe	LR
2021	Newbuild	TBN 2	Car/Passenger ferries	Seaspan Ferries	America	BV
2021	Newbuild	TBN 2	Crude oil tankers	Sinokor/Shell	Global	BV
2021	Newbuild	TBN 2	Crude oil tankers	Rosneft	Europe	RS
2021	Newbuild	TBN 2	Cruise ships	Havila Kyststruten	Norway	DNV GL
2021	Newbuild	TBN 2	Fishing vessels	Nordlaks	Norway	--
2021	Newbuild	TBN 2	General cargo ships	Spliethoff/Wijnne Barends	Europe	--
2021	Newbuild	TBN 2	Offshore supply ships	COSL	Asia	CSS
2021	Newbuild	TBN 2	Oil/Chemical tankers	Donsötank	Global	--
2021	Newbuild	TBN 2	Oil/Chemical tankers	JP Morgan/Shell	Europe	LR
2021	Newbuild	TBN 2	Oil/Chemical tankers	Termtank	Europe	--
2021	Newbuild	TBN 2	Other activities	Van Oord	Global	BV
2021	Newbuild	TBN 2	RoPax	TT Line Co Pty Ltd	Oceania	LR
2021	Newbuild	TBN 2	Ro-Ro cargo ships	Wallenius SOL	Europe	LR
2021	Newbuild	TBN 3	Container ships	Eastern Pacific Shipping	Global	LR
2021	Newbuild	TBN 3	Crude oil tankers	Sinokor/Shell	Global	BV
2021	Newbuild	TBN 3	Crude oil tankers	Rosneft	Europe	RS
2021	Newbuild	TBN 3	General cargo ships	Spliethoff/Bore	Europe	--
2021	Newbuild	TBN 3	Offshore supply ships	COSL	Asia	CSS
2021	Newbuild	TBN 3	Oil/Chemical tankers	JP Morgan/Shell	Europe	LR
2021	Newbuild	TBN 3	Ro-Ro cargo ships	Wallenius SOL	Europe	LR
2021	Newbuild	TBN 4	Crude oil tankers	Rosneft	Europe	RS
2021	Newbuild	TBN 4	Container ships	Eastern Pacific Shipping	Global	DNV GL
2021	Newbuild	TBN 4	Crude oil tankers	Sinokor/Shell	Global	BV
2021	Newbuild	TBN 4	Offshore supply ships	COSL	Asia	CSS
2021	Newbuild	TBN 4	Oil/Chemical tankers	JP Morgan/Shell	Europe	LR
2021	Newbuild	TBN 4	Ro-Ro cargo ships	Wallenius SOL	Europe	LR
2021	Newbuild	TBN 5	Container ships	CMA CGM	Global	BV
2021	Newbuild	TBN 5	Crude oil tankers	Rosneft	Europe	RS
2021	Newbuild	TBN 5	Crude oil tankers	Sinokor/Shell	Global	BV
2021	Newbuild	TBN 5	Offshore supply ships	COSL	Asia	CSS
2021	Newbuild	TBN 6	Offshore supply ships	COSL	Asia	CSS
2021	Newbuild	TBN 6	Crude oil tankers	Sinokor/Shell	Global	BV
2021	Newbuild	TBN 7	Offshore supply ships	COSL	Asia	CSS
2021	Newbuild	TBN 7	Crude oil tankers	Sinokor/Shell	Global	BV
2021	Newbuild	TBN 7	Oil/Chemical tankers	Eastern Pacific Shipping	Global	ABS
2021	Newbuild	TBN 8	Offshore supply ships	COSL	Asia	CSS
2021	Newbuild	TBN 8	Crude oil tankers	Sinokor/Shell	Global	BV
2021	Newbuild	TBN 8	Oil/Chemical tankers	Eastern Pacific Shipping	Global	ABS
2021	Newbuild	TBN 9	Container ships	Eastern Pacific Shipping	Global	LR
2021	Newbuild	TBN 9	Crude oil tankers	Sinokor/Shell	Global	BV
2021	Newbuild	TBN 9	Offshore supply ships	COSL	Asia	CSS
2021	Retrofit	Midnight Sun	Ro-Ro cargo ships	TOTE Shipholdings	America	ABS
2021	Newbuild	TBN1	RoPax	Wasaline	Europe	--
2021	Retrofit	Munsterland	Car/Passenger ferries	Ems AG	Europe	DNV GL
2021	Retrofit	North Star	Ro-Ro cargo ships	TOTE Shipholdings	America	ABS
2021	Retrofit	Nordlys	Cruise ships	Hurtigruten	Norway	DNV GL
2021	Retrofit	Polarlys	Cruise ships	Hurtigruten	Norway	DNV GL
2021	Retrofit	Richard With	Cruise ships	Hurtigruten	Norway	DNV GL
2022	Newbuild	Canopée	General cargo ships	Alizés (Ariane)	Global	--
2022	Newbuild	Icon of the Seas	Cruise ships	RCCL	Global	DNV GL

Year of delivery	Project type	Ship name	Ship type	Shipowner	Area of operation	Class
2022	Newbuild	TBN	RoPax	Tallink	Europe	--
2022	Newbuild	TBN	RoPax	TT-Line GmbH	Europe	--
2022	Newbuild	TBN 1	Car/Passenger ferries	BC Ferries	America	LR
2022	Newbuild	TBN 1	Car/Passenger ferries	MOL	Asia	--
2022	Newbuild	TBN 1	Crude oil tankers	Eastern Pacific Shipping	Global	ABS
2022	Newbuild	TBN 1	Container ships	TBA	Global	--
2022	Newbuild	TBN 1	Cruise ships	MSC Cruises	Global	BV
2022	Newbuild	TBN 1	Oil/Chemical tankers	SCF	Global	RS
2022	Newbuild	TBN 1	Oil/Chemical tankers	Nisshin Shipping	Global	--
2022	Newbuild	TBN 1	Oil/Chemical tankers	Tarbit Shipping	Europe	--
2022	Newbuild	TBN 1	RoPax	Polish Baltic Shipping Company	Europe	Unknown
2022	Newbuild	TBN 2	Container ships	TBA	Global	--
2022	Newbuild	TBN 2	Cruise ships	Carnival Corporation	Global	RINA
2022	Newbuild	TBN 2	Crude oil tankers	Eastern Pacific Shipping	Global	ABS
2022	Newbuild	TBN 2	Cruise ships	Disney Cruise Lines	Global	LR
2022	Newbuild	TBN 2	Cruise ships	P&O Cruises	Global	RINA
2022	Newbuild	TBN 2	Oil/Chemical tankers	Nisshin Shipping	Global	--
2022	Newbuild	TBN 2	Oil/Chemical tankers	SCF	Global	RS
2022	Newbuild	TBN 2	Oil/Chemical tankers	Tarbit Shipping	Europe	--
2022	Newbuild	TBN 3	Bulk carriers	H-Line	Global	DNV GL/KR
2022	Newbuild	TBN 3	Car carriers	UECC	Global	DNV GL
2022	Newbuild	TBN 3	Container ships	TBA	Global	--
2022	Newbuild	TBN 3	General cargo ships	Spliethoff/Wijnne Barends	Europe	--
2022	Newbuild	TBN 3	Oil/Chemical tankers	Nisshin Shipping	Global	--
2022	Newbuild	TBN 3	Oil/Chemical tankers	SCF	Global	RS
2022	Newbuild	TBN 4	Bulk carriers	H-Line	Global	DNV GL/KR
2022	Newbuild	TBN 4	Container ships	TBA	Global	--
2022	Newbuild	TBN 4	General cargo ships	Spliethoff/Wijnne Barends	Europe	--
2022	Newbuild	TBN 4	Oil/Chemical tankers	Nisshin Shipping	Global	--
2022	Newbuild	TBN 5	Container ships	TBA	Global	--
2022	Newbuild	TBN 5	Container ships	Eastern Pacific Shipping	Global	DNV GL
2022	Newbuild	TBN 5	Oil/Chemical tankers	Nisshin Shipping	Global	--
2022	Newbuild	TBN 6	Container ships	Eastern Pacific Shipping	Global	DNV GL
2022	Newbuild	TBN 6	Container ships	TBA	Global	--
2022	Newbuild	TBN 7	Oil/Chemical tankers	Nisshin Shipping	Global	--
2022	Newbuild	TBN 6	Oil/Chemical tankers	Nisshin Shipping	Global	--
2022	Newbuild	TBN 8	Oil/Chemical tankers	Nisshin Shipping	Global	--
2023	Newbuild		Cruise ships	Aida Cruises	Global	RINA
2023	Newbuild	Atlantique Chantiers I34	Cruise ships	MSC Cruises	Global	BV
2023	Newbuild	Santona	RoPax	Brittany Ferries	Europe	DNV GL
2023	Newbuild	TBN 1	Bulk carriers	MOL	Asia	--
2023	Newbuild	TBN 1	Bulk carriers	NYK Line	Asia	--
2023	Newbuild	TBN 1	Cruise ships	Princess Cruises	Global	LR
2023	Newbuild	TBN 1	Other activities	German Transport Ministry	Europe	Unknown
2023	Newbuild	TBN 2	Car/Passenger ferries	MOL	Asia	--
2023	Newbuild	TBN 3	Cruise ships	Disney Cruise Lines	Global	LR
2024	Newbuild	TBN	Cruise ships	RCCL	Global	DNV GL
2024	Newbuild	TBN 1	Cruise ships	TUI Cruises	Global	DNV GL
2024	Newbuild	TBN 2	Cruise ships	MSC Cruises	Global	BV
2024	Newbuild	TBN 2	Other activities	German Transport Ministry	Europe	Unknown
2025	Newbuild	TBN 2	Cruise ships	Princess Cruises	Global	LR
2025	Newbuild	TBN 2	Cruise ships	RCCL	Global	DNV GL
2025	Newbuild	TBN 3	Cruise ships	MSC Cruises	Global	--
2026	Newbuild	TBN 2	Cruise ships	TUI Cruises	Global	DNV GL
2027	Newbuild	TBN 4	Cruise ships	MSC Cruises	Global	--

WORLD SMALL SCALE LNG FLEET*

Built	Name	CBM	Cargo Type	Trading area	Trading in LNG?	Ship Owner / Operator
1974	Seagas	187	LNG	Sweden	Yes	AGA
1988	Kayoh Maru	1,517	LNG	Japan	Yes	Daiichi
1993	Aman Bintulu	18,928	LNG	Malaysia - Japan	Yes	Perbadanan/NYK
1996	Surya Aki	19,475	LNG	Indonesia - Japan	Yes	MCGC
1997	Aman Sendai	18,928	LNG	Malaysia - Japan	Yes	Perbadanan/NYK
1998	Pelita Energy	18,800	LNG	Malaysia - Japan	Yes	Perbadanan/NYK
2000	Triputra	23,096	LNG	Indonesia - Japan	Yes	MCGC
2003	Pioneer Knutsen	1,100	LNG	Norway	Yes	Knutsen
2003	Shinju Maru No.1	2,540	LNG	Japan	Yes	Shinwa
2005	North Pioneer	2,500	LNG	Japan	Yes	Japan Liquid Gas
2007	Sun Arrows	19,531	LNG	Malaysia - Russia - Japan	Yes	Mitsui
2008	Kakurei Maru	2,536	LNG	Japan	Yes	Hogaki Zosen
2008	Shinju Maru No.2	2,540	LNG	Japan	Yes	Shinwa
2009	Coral Methane	7,551	LNG/LPG/Ethylene	Northwest Europe/Baltics	Yes, sometimes	Anthony Veder
2010	Coral Favia	10,000	LNG/LPG/Ethylene	Worldwide	No	Anthony Veder
2010	Coral Fraseri	10,000	LNG/LPG/Ethylene	Worldwide	No	Anthony Veder
2011	Akebono Maru	3,556	LNG	Japan	Yes	Chuo Kaiun
2011	Coral Furcata	10,000	LNG/LPG/Ethylene	Worldwide	No	Anthony Veder
2011	Coral Fungia	10,000	LNG/LPG/Ethylene	Worldwide	No	Anthony Veder
2011	Vision Spirit	12,000	LNG/LPG/Ethylene	Worldwide	No	Teekay
2011	Unikum Spirit	12,000	LNG/LPG/Ethylene	Worldwide	No	Teekay
2012	Coral Energy	15,600	LNG	Northwest Europe/Baltics	Yes	Anthony Veder
2013	JX Energy TBN	2,500	LNG	Japan	Yes	JX Energy
2013	Kakuyu Maru	2,500	LNG	Japan	Yes	Tsurumi Sunmarine
2013	Coral Anthelia	6,500	LNG/Ethylene			Anthony Veder
2015	LNG Barge TBN	3,000	LNG	US Coast	Yes	LNG America
2015	JS Ineos Ingenuity	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2015	JS Ineos Insight	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2015	JS Ineos Intrepid	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2015	PetroChina TBN	30,000	LNG	China		PetroChina
2016	Clean Jacksonville	2,200	LNG	US Coast	Yes	CME
2016	LNG Prime	2,250	LNG	Northwest Europe	Yes	Veka Deen LNG
2016	JS Ineos Indepence	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2016	JS Ineos Innvation	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2016	JS Ineos Inspiration	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2016	Hai Yang Shi You 301	30,000	LNG	Bali FSU	Yes	CETS (CNOOC)
2017	Oizmendi	600	LNG	Bilbao	Yes	Itsas Gas
2017	ENGIE Zeebrugge	5,000	LNG	Northwest Europe	Yes	NYK
2017	Coralius	5,800	LNG	Northwest Europe/Baltics	Yes, for Skangas	Anthony Veder
2017	Cardissa	6,500	LNG	Northwest Europe	Yes	Shell

For more information please visit <http://small-lng.com>

*Includes multi-gas, ethylene and LNG bunker ships with 40,000 cubic metres LNG cargo capacity or less

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** = project shelved † =Data to be verified Data last updated = 10th February 2020

Built	Name	CBM	Cargo Type	Trading area	Trading in LNG?	Ship Owner / Operator
2017	LNG-Gorskaya TBN	7,300	LNG	Russia	Yes	LNG-Gorskaya
2017	LNG-Gorskaya TBN	7,300	LNG	Russia	Yes	LNG-Gorskaya
2017	LNG-Gorskaya TBN	7,300	LNG	Russia	Yes	LNG-Gorskaya
2017	Coral EnergICE	18,000	LNG	Northwest Europe/Baltics	Yes	Anthony Veder
2017	JS Ineos Invention	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2017	JS Ineos Intuition	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2017	Coral Encanto	30,000	LNG	China	Yes	Anthony Veder
2018	HUA XIANG 8	13,720	LNG	China	Yes	Zhejiang Huaxiang
2018	LNG London	3,000	LNG	Northwest Europe	Yes	Shell
2018	Shell Bunker Barge TBN 2	6,500	LNG	Northwest Europe	Yes	Shell
2018	Shell Bunker Barge TBN 3	6,500	LNG	Northwest Europe	Yes	Shell
2018	Kairos	7,500	LNG	Baltic	Yes	Bernhard Schulte
2018	Qi Yuan	28,000	LNG	China	Yes	Dalian Inteh Group
2018	Bunker Breeze	0	LNG	Barcelona	Yes	Suardiaz Energy Shipping
2019	KLine TBN	7,500	LNG	Korea	Yes	Korea Line
2019	KLine TBN	7,500	LNG	Korea	Yes	Korea Line
2019	Stolt TBN	7,500	LNG	Mediterranean	Yes	Stolt-Nielsen Gas
2019	Stolt TBN	7,500	LNG	Mediterranean	Yes	Stolt-Nielsen Gas
2019	Gas Agility	18,600	LNG	NWE	Yes	MOL
2019	Flexfueller 001	1,480	LNG	Amsterdam	Yes	Titan LNG
2020	Q-LNG 4000	4,000	LNG	US Coast	Yes	Q-LNG Transport/Harvey Gulf
2020	Stolt TBN (option) **	7,500	LNG		Yes	Stolt-Nielsen Gas
2020	Stolt TBN (option)	7,500	LNG		Yes	Stolt-Nielsen Gas
2020	FuelLNG TBN	7,500	LNG	Singapore	Yes	FuelLNG
2020	CLS TBN	3,500	LNG	Japan	Yes	CLS
2020	Elenger TBN	6,000	LNG	NWE	Yes	Elenger
2020	ENN TBN	8,500	LNG	China	Yes	ENN
2020	Flexfueller 002	1,480	LNG	Antwerp	Yes	Titan LNG
2021	Stolt TBN (option)	7,500	LNG		Yes	Stolt-Nielsen Gas
2021	Knutsen TBN	30,000	LNG	Mediterranean	Yes	Knutsen OAS
2021	Gazprom Neft TBN	5,800	LNG	Russia	Yes	Gazprom Neft
2021	PE TBN	12,000	LNG	Singapore	Yes	MOL
2021	JMU TBN	2,500	LNG	Japan	Yes	JMU
2022	Stolt TBN	20,000	LNG	Worldwide	Yes	Stolt-Nielsen Gas
2022	Stolt TBN	20,000	LNG	Worldwide	Yes	Stolt-Nielsen Gas
2022	PNE TBN	5,400	LNG	USG	Yes	PNE
2024	Stolt TBN (option)	20,000	LNG	Worldwide	Yes	Stolt-Nielsen Gas
2024	Stolt TBN (option)	20,000	LNG	Worldwide	Yes	Stolt-Nielsen Gas
2026	Stolt TBN (option)	20,000	LNG	Worldwide	Yes	Stolt-Nielsen Gas
2026	Stolt TBN (option)	20,000	LNG	Worldwide	Yes	Stolt-Nielsen Gas

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