

LNG Fuelling

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Study highlights LNG advantage in emissions race

A switch to LNG as a marine fuel can deliver emission reductions of up to 21% over the short term, according to the latest data from energy consultancy thinkstep.

The findings, published as part of thinkstep's in depth Life Cycle GHG Emission Study, compare LNG with current oil-based marine fuels over the entire life-cycle from Well-to-Wake (WtW) and highlight both the economic and environmental benefits of LNG. The study was commissioned by the Society for Gas as a Marine Fuel (SGMF) and SEA/LNG.

"The Life Cycle GHG Emission Study is a long-awaited piece of the "LNG as a marine fuel" puzzle. It not only confirms what we already knew in terms of LNG's immediate impact on air quality, human health and its cleanliness, but clearly highlights the genuine, substantiated GHG benefits of using today's marine engines capable of burning natural gas," Peter Keller, chairman of SEA/LNG, commented.

Independent academic review

The cross-sector study was conducted independently in accordance with ISO standards and reviewed by a panel of independent academic experts from key institutions in France, Germany, Japan and the U.S. upon completion.

"LNG is SAFE to use, fully com-

pliant and readily available as a marine transport fuel. Standards, Guidelines and Operational Protocols are all in place to ensure that the safe way is the only way when using gas as a marine fuel. LNG meets and exceeds all current and 2020 marine fuel compliance requirements for content and emissions, local and GHG. With the world LNG Bunker Vessel fleet doubling in the next 18 months and those vessels being deployed at major bunkering hubs, LNG as a ship fuel is rapidly becoming readily available," Chad Verret, Society for Gas as a Marine Fuel (SGMF) Board Chairman, commented.

By comparing absolute WtW emissions, the study's authors estimate that LNG-fuelled engines produce between 14% to 21% less emissions compared to HFO fuelled ships with 2-stroke slow speed engines. Given that 72% of marine fuel consumed today is used by 2-stroke engines the authors suggest significant scope for global reductions.

Primary data from OEM partners

Utilizing primary data provided by Original Equipment Manufacturers



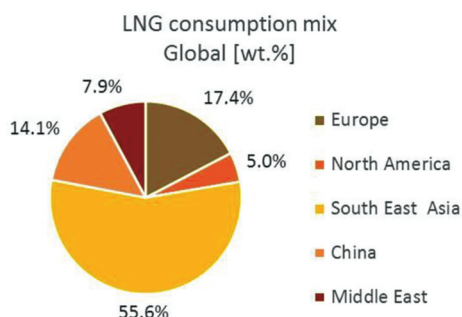
Oliver Schuller, report author at thinkstep

thinkstep assessed all major types of marine engines and global sources of supply. Key OEM partners included Caterpillar MaK, Caterpillar Solar Turbines, GE, MAN Energy Solutions, Rolls Royce (MTU), Wärtsilä, and Winterthur Gas & Diesel, with further input from ExxonMobil, Shell, and Total from the supply side.

"The main goal of this study was to provide an accurate report of the life-cycle GHG emissions from LNG as a marine fuel compared with conventional marine fuels," Dr Oliver Schuller, Team Lead Energy & Mobility at thinkstep, said.

The report suggests that LNG may gain further advantage going forward thanks to "optimisation in supply chain and engine technology developments" leading to additional emissions savings.

"bioLNG and Synthetic LNG - both fully interchangeable with LNG derived from fossil feedstock - offer the potential for significant additional GHG emissions reductions. For example, a blend of 20% bioLNG as a drop-in fuel can reduce GHG emissions by a further 13% when compared to 100% fossil fuel LNG," the report's authors state. ■



Global LNG consumption mix as used in the thinkstep study.

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MAN Cryo delivers *Elio* LNG fuel system

Power equipment manufacturer MAN Cryo has delivered and installed an LNG fuel gas system aboard Italian ferry vessel *Elio*.

"This project is of strategic importance since it is the very first RoPax vessel in the Mediterranean to operate on LNG. It follows MAN's vision to become a leading supplier in the regions where we see a strong growth of demand for LNG solutions," Louise Andersson, Head of MAN Cryo, said.

Delivered on behalf of ferry operator, Caronte & Tourist, the system was installed at the Sefine Shipyard in Yalova, Turkey.

Triple dual-fuel engines

The new ferry will primarily operate on the strait of Messina between the Italian mainland and the Sicilian city of Messina and is powered by three dual-fuel

propulsion engines.

"Sefine Shipyard has been very satisfied with the high-quality standard of the equipment, start-up, commissioning and after-sales services of MAN Cryo in the *Elio* project, the first Mediterranean ferry with LNG propulsion," Selçuk Bakanoglu, Business Development Manager of Sefine Shipyard, said.

Measuring 133 metres in length and 21.5 metres in width, the vessel is double-ended RoPax ferry has capacity for up to 290 cars on two vehicle decks, and 1,500 passengers with a service speed of 18.5 knots.

150 cubic metre capacity

Equipment installed on the vessel comprised vacuum-insulated type

C tank, TCS with airlock, valves, piping and vaporization equipment, bunkering station, heat-exchanger unit and free-standing control and emergency shut-down system. The type C tank installed aboard the *Elio* has 150 cubic metres gross volume.

"Caronte & Tourist is very happy with the performance of the LNG system that MAN Energy Solutions has provided. Since *Elio* is operating on a tight schedule on a daily basis, it is important that the gas-supply system works during all circumstances. In this per-



The *Elio*

spective, MAN Energy Solutions is our trustworthy partner," Luigi Genghi, General Manager of Caronte & Tourist, said.

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

Cryostar launches mobile LNG station

Cryogenic equipment supplier Cryostar has launched a new mobile LNG station in the Netherlands.

Launched in partnership with Dutch fuel merchant Rolande, the mobile LNG unit was deployed at the Green Point Rolande service station. The site is the first station deployed by Cryostar under its 'FuelNG-Deploy' concept and the company's 100th station.

"The station's main features are its compactness, modularity and transportability. Our FuelNG-Deploy station is the ideal solution

for our customers wanting to enter this field or develop business in it," Samuel Zouaghi, President of Cryostar, said.

Relocatable LNG fuelling

The firm's FuelNG-Deploy system offers a full relocatable LNG fuelling station and is capable of refuelling up to 75 vehicles per day. The design features LNG storage capacity of 40 cubic metres and

flexible fuelling options.

"Combining rapidity and low implementation costs, the FUELNG-DEPLOY station is supplied as a turnkey solution and can either be installed alongside an existing standard station or used to equip a new site," Zouaghi said in comments to news agency Gasworld.

Headquartered in the Alsace region of France close to the Swiss border, Cryostar is a subsidiary of German multinational the Linde Group. The firm designs and manufactures a range of cryogenic solutions for LNG, industrial gases, clean energy and hydrocarbon applications.

Iveco refuelling demo

Attendees at the opening ceremony witnessed a demonstration of the LNG refuelling process car-

ried out for an Iveco tractor and presentation of the FuelNG-Deploy station's unique pump design.

"An impressive and very interested crowd gathered to witness our first LNG FuelNG-Deploy station in operation, and it was an event to be remembered, demonstrating the power of our established partnership with our long-term loyal customer Rolande," Zouaghi concluded.

Rolande LNG is a wholly owned subsidiary of Iveco Dealer Schouten and has developed LNG trucks and infrastructure from its research base at Giessen in North Brabant. The firm has received funding from the Dutch Ministry of Economic Affairs to roll out the entire supply chain of service stations, distribution, procurement, customer and providing trucks. ■



FuelNG-Deploy launch ceremony

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Keppel, DNV GL partner to promote LNG as maritime fuel

Offshore engineering solutions provider Keppel has partnered with classification society DNV GL to promote LNG as a ship fuel and boost uptake across the industry.

The two organisations signed a framework agreement covering potential newbuilding projects such as LNG bunker vessels, small-scale LNG carriers and floating storage regasification units (FSRUs), as well as LNG-related assets utilizing battery and hybrid technologies.

“The signing of this agreement signifies another milestone in the close partnership between DNV GL as the leading classification society for LNG ships and offshore assets, and Keppel Offshore & Marine, a world leader in conversion projects for Floating Storage Regasification Units (FSRU) and floating liquefied natural gas vessels (FLNGV) as well as for newbuilding of small-scale LNG carriers and LNG bunker vessels,” Cristina Saenz de Santa Maria, DNV GL’s Regional Manager for South East Asia, Pacific and India, at DNV GL, said.

KMDTech exploring LNG vessel design

The classification society will work closely with Keppel subsidiary KMDTech, or Keppel Marine and Deepwater Technology, to expedite approval for new designs.

“One of the objectives of our

collaboration with Keppel is to facilitate the increased supply of LNG bunkering infrastructure by being future ready through design approvals of different sizes of LNG bunker vessels, and LNG-related assets such as small-scale LNG carriers and FSRU,” said Johan Peter Tuttunen, Business Director Gas Carriers in DNV GL.

The partners will also collaborate to advance asset design through the optimization of machinery and systems to increase fuel efficiency, using advance simulation tools such as DNV GL’s COSSMOS.

AiP for LNG bunker designs

As a first step in this partnership DNV GL has announced it will issue Approval in Principle (AiP) certificates for two small-scale LNG carriers from KMDTech, both designs also featuring bunkering capacities.

“The LNG carriers are each designed to carry up to 7,500 cubic meters of LNG in Type C-tanks. An optimised deck arrangement for the modular LNG gas supply, filling and safety systems increases the cargo capacity and efficiency of the vessels... and will also have a



Keppel representatives signing framework agreement

class notation for bunkering which enables the provision of LNG bunkering services if required,” DNV GL said in a statement

DNV GL is the world’s largest classification society responsible for 13,175 vessels and mobile offshore units. Headquartered in Bærum in Norway the organization also provides technical consultancy to the energy and transport sectors.

“We are pleased to partner with DNV GL in developing a suite of LNG related vessels that are ready to meet the needs of the

market as the adoption of LNG as ship fuel increases,” Abu Bakar Mohd Nor, Managing Director of Keppel O&M for Gas and Specialised Vessels, said. Joint design and engineering offices will be located at KMDTech Singapore, with Keppel O&M’s yards to undertake project execution. Both partners will also work together to establish round table discussions involving all stakeholders in the LNG-as-fuel value chain, including gas and LNG bunker suppliers, designers, shipbuilders, ship-owners and operators. ■



Singapore shoreline

SEA\LNG adds Port of Vancouver as member

Industry consortium SEA\LNG has welcomed its first port member in North America with the addition of the Vancouver Fraser Port Authority (VFPA).

As the federal agency of the Port of Vancouver, Canada's largest port, the VFPA will bring substantial support for the consortium's mission to "accelerate the widespread adoption of LNG as a marine fuel".

"We are pleased to welcome the Vancouver Fraser Port Authority to our growing coalition and look forward to leveraging their expertise to realise our vision of developing LNG infrastructure in ports around the globe to enable quick, safe, and cost-effective bunkering," Peter Keller, SEA\LNG chairman, commented.

Fourth port member

The port authority is the fourth port member to sign up to the coalition, and joins Port of Rotterdam, Yokohama-Kawasaki International Port Corporation (YKIP), and most recently the Maritime and Port Authority of Singapore (MPA).

"As part of our vision to be the world's most sustainable port, we engage in a number of emissions management initiatives that help support a healthy environment. This partnership with SEA\LNG represents an opportunity for us to be part of a multi-sector group that is reducing marine shipping emissions and improving air quality." Duncan Wilson, Vice President at the Vancouver Fraser Port Authority, said.

The VFPA is already working closely with the regional gas supplier, Fortis BC, and with industry, academia and government to advance LNG bunkering in the Port of Vancouver with aims to implement a competitive LNG value chain by 2020.

Joint studies progress

Uniting key industry players from across the LNG marine value chain, SEA\LNG comprises fuel



South shore Port of Vancouver

suppliers, shipping companies, infrastructure providers, downstream companies, shipyards, OEMs, classification societies, port authorities, shipbrokers, and financial institutions.

The organisation is currently working with the Society for Gas as a Marine Fuel to develop studies and tools to better understand the true benefits of LNG from both an air quality and GHG miti-

gation perspective.

"To date, LNG presents the most promising path to decarbonisation as all other alternative fuels are too embryonic for deep-sea shipping... The coalition continues to encourage meaningful debate using accurate, independent data which has been academically verified through sound analysis," a spokesperson for the coalition said. ■

Equinor signs Gas4Sea for Aframax LNG supply

Joint venture fuel supplier Marine LNG Zeebrugge has signed an agreement with Norwegian energy group Equinor for provision of LNG to multiple crude shuttle tankers at the port of Rotterdam.

The deal will see Marine LNG Zeebrugge supply LNG to four dual-fuel tankers at the port that are due to enter service in early 2020. Marine LNG Zeebrugge is a subsidiary of LNG advocate group Gas4Sea, which is a joint venture between French energy group ENGIE, Japanese conglomerate Mitsubishi Corporation and shipping line NYK.

"Marine LNG Zeebrugge will supply LNG using the LNG bunker-

ing vessel *Engie Zeebrugge* which started operations in 2017. She is currently performing ship-to-ship LNG bunkering services in the port of Zeebrugge, in Belgium," a spokesperson for Gas4Sea commented.

Northern European operation

The four dual-fuel tankers are part of a growing wave of large-scale LNG capable vessels joining

the global fleet and will be operated by Equinor in Northern European seas.

"*Engie Zeebrugge* holds an LNG capacity of 5,000 cubic metres and is designed to serve a full range of shipping customers," a spokesperson for Gas4Sea said.

Launched in 2016 to advance LNG as a marine fuel via ship-to-ship transfer and set "a new direction in the maritime sector", Gas4Sea's partners claim more than 50 years' combined experience in LNG operation.

Engie Zeebrugge

The latest deal will build on a previous agreement between Gas4Sea partners and Equinor's forerunner Statoil in 2017 for supply of LNG at the Port of Rotterdam.

"The challenge in making LNG grow in the bunker market is to develop sufficient supply infras-

tructure to support the increasing number of LNG-fueled ships that are expected to come into operation. *Engie Zeebrugge*, in this respect, marks a milestone in the development of the European LNG bunkering chain," a spokesperson for Engie said at the time.

Now having operated for two years at the port, the *Engie Zeebrugge* is one of the most established LNG bunker vessels in Europe and serves a full range of shipping customers from Fluxys' LNG terminal in Zeebrugge, where small carriers with capacities from 2,000 cubic metres upwards can dock.

Since launching the Gas4Sea consortium has expanded its international reach signing agreements with several major energy groups as well as supporting cross-sector research to support the next phase of growth in LNG infrastructure. ■



Engie Zeebrugge

Gothenburg launches bunkering app

The Gothenburg Port Authority has launched a new bunkering app to ease the use of LNG bunkering at the Energy Port on the west coast of Sweden.

The digital solution is one of the first dedicated bunkering apps in the world and was hailed as a 'key step' in the development of bunkering infrastructure.

"Overall, I think the app is already working very well, although the coastguard and VTS notification function needs to be more user-friendly. Booking quay space and the quay plan are excellent, giving us better foresight, which in turn helps us in our day-to-day work," said Karolina Skoglund, bunker operator at Bunker One.

VTS administration support

The new app compiles various bunkering statistics for operators, the Swedish Maritime Administration Vessel Traffic Service (VTS) and other organisations at the port and allows submission of advance bunkering notifications directly from the app interface.

As well as suite of reporting tools, the app also shows available collection points for loading marine fuel onto bunker vessels with the app's designers aiming to

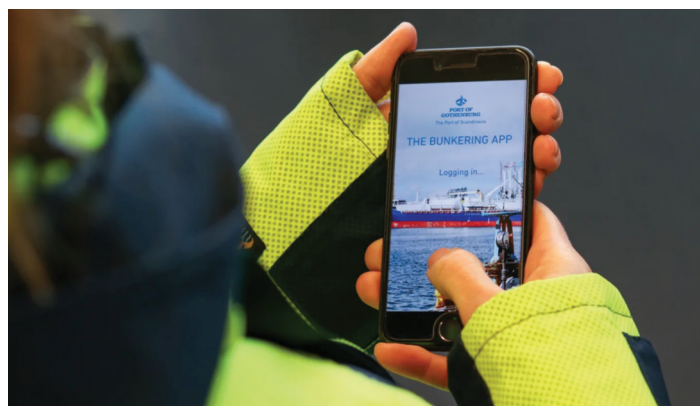
make it simpler for bunker operators "to plan and carry out their work effectively".

"We are confident that using the app will help boost efficiency and maximise the use of our bunker quays. But we would like to point out that it is not our intention to use the app to replace daily contact with our customers, which will continue to be an important part of our relationship," Dan-Erik Andersson, Head of Operations at the Energy Port, said.

Security benefits

The Port of Gothenburg Energy Port is one of the world's largest bunkering hubs and the largest open access energy port in the Nordic region. The hub handles over 2,500 calls and more than 23 million tonnes of energy products each year.

"The app is also of benefit to the Energy Port's security coordinators, who save valuable time by no longer needing to act as intermediaries between the different parties. As the bunker operators administer quay bookings indepen-



Gothenburg Port Authority's newly developed bunkering app

dently, all that is required is process verification," a GPA spokesperson commented.

Digitization rollout

The full deployment follows a test period that began in January where selected users were able to contribute valuable input in the lead-up to the official rollout. Early adopter Bunker One was one of the participating companies and now uses the app as part of its regular operations.

The development of the bunkering app is closely linked with previous automation work at the Energy Port which has included a new digital process control system to streamline pumping via the port's extensive pipeline network. ■

NEWS NUDGES

Algeciras plans LNG bunkering expansion

Authorities at the Port of Algeciras in Spain have announced plans to expand LNG bunkering operations as it forecasts that demand for LNG, from vessels operating in the Strait of Gibraltar, will hit approximately 1.8 million cubic meters by 2030.

Speaking at the recent CORE LNGas Hive Conference III, general director of the Port Authority of Algeciras (APBA), José Luis Hormaechea, highlighted the important role the port intends to play in the supply picture.

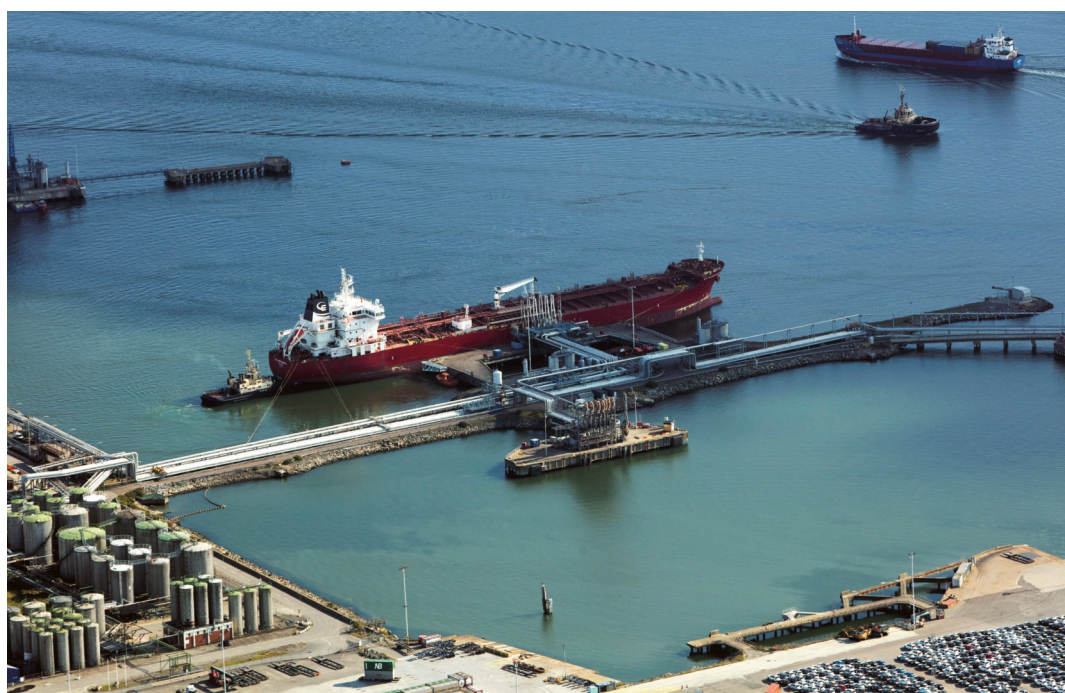
The commitment follows an agreement with utility company Gas Natural Fenosa for LNG supply to the port of Algeciras, with an option to extend to all peninsular ports.

Klaipėda announces LNG Forum

Authorities at the port of Klaipėda are to host an LNG forum as part of a drive to cement the port's position as an LNG distribution and technology development centre serving the Baltic Sea region.

An estimated 200 participants from Lithuania and abroad have registered for the event over the course of two days.

The Port of Klaipėda is one of the few ice-free ports in northernmost Europe, and the largest in Lithuania. ■



Gothenburg Energy Port



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35,000

International
Attendees

700

International
Exhibitors from
the Up, Mid &
Downstream Sectors

20

Exhibiting
Country
Pavilions

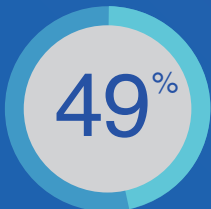
100

Countries
Representing the
Global Gas Value
Chain

55,000

SQM Exhibition
Space

Purchasing Power of Visitors to Gastech*



Up to US\$50M



Up to US\$50M & Above

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dmg events

Knutsen adds integrated LNG propulsion and cargo solution

Norwegian shipping line Knutsen OAS has selected Finnish equipment manufacturer Wärtsilä for the supply and installation of an integrated LNG propulsion and cargo handling solution on a newbuild vessel.

The order will see Wärtsilä supply its advanced system for a new 30,000 cubic metre LNG vessel, under construction at the Hyundai Mipo Dockyard (HMD) in South Korea.

"The latest development of the LNG infrastructure provides clear evidence of the increasing importance of LNG fuel to the marine industry. Wärtsilä has a lot of experience and know-how throughout the LNG value chain, and we are confident that their solutions are what we need for this latest expansion to our fleet," Jarle Østenstad, Newbuilding Director, Knutsen OAS Group, said.

C-type bi-lobe cargo tanks

The integrated system includes fuel supply, cargo control system, boil-off gas (BOG) reliquefaction, and safety management. It will be powered by Wärtsilä's 5-cylinder WinGD X52DF dual-fuel main engine.

"The Wärtsilä auxiliary dual-fuel engines are essential consumers for the BOG management system, which monitors and controls the cryogenic cargo, to ensure, in combination with a Wärtsilä developed mixed refrigerant re-liquefaction unit, all time control over the cargo tank pressure and temperature," a spokesperson for Wärtsilä explained.

The vessel will be one of the first LNG carriers in its size range to be equipped with space-saving C-type bi-lobe cargo tanks.

Three 20DF dual auxiliary engines

Headquartered in Helsinki, Finland, Wärtsilä's core products include large combustion engines used in cruise ships and ferries alongside reciprocating internal combustion (IC) engines that can burn a variety of fuels, including natural gas. In total, the firm will



Knutsen OAS Shipping LNG vessel

supply three Wärtsilä 20DF dual-fuel auxiliary engines that power the board net, thrusters, cargo control system, and re-liquefaction module.

A single Wärtsilä Controllable Pitch Propeller system, connected to the main engine, will allow the vessel to utilise a combinator mode that controls the shaft power, pitch and speed, delivering maximum fuel efficiency.

Propulsion and cargo handling equipment is scheduled for delivery in 2020, and the vessel is scheduled for delivery to Knutsen in the first half of 2021.

The vessel will be operated by Knutsen and chartered to Italian energy services Edison under a 12-year term. Once operational in 2021 it will be used to supply coastal LNG Deposit terminals in Italy.

NEWS NUDGE

Excelerate, Equinor complete first STS LNG transfer in Bahamas

Fuel specialist Excelerate Energy and oil and gas major Equinor Energy have completed the first ever ship-to-ship (STS) transfer of liquefied natural gas (LNG) in The Bahamas.

The bunkering operation was carried out between Excelerate's floating storage regasification unit (FSRU) *Exemplar* and Equinor's LNG carrier *Arctic Voyager*.

"Excelerate conducted the industry's first commercial STS transfer of LNG in 2007, and since then, STS transfers have been completed and proven safe in a wide range of environments, now including The Ba-

hamas. This new STS location allows us to provide additional commercial flexibility to our customers and respond to prompt market needs in a safe and reliable manner," Daniel Bustos, Excelerate's Chief Commercial Officer, said.

The procedure involved transfer of a full LNG cargo, with fuel transferred using a double-banked LNG transfer system while the vessels were moored at Equinor's South Riding Point storage and transshipment terminal.

To date, Excelerate has successfully transferred over 170,900,000 cubic meters of LNG using its STS protocol, with over 1,300 involving third-party vessels.



The vessel will feature an integrated package of Wärtsilä solutions

AET Aframax duo bunker at Rotterdam

Singaporean tanker operator AET has completed the first ship-to-ship (STS) LNG bunkering of its newest Aframax tankers at the port of Rotterdam in the Netherlands.

The dual-fuel sister Aframaxes, *Eagle Brasilia* and *Eagle Bintulu*, were each loaded with 1,040 cubic metres of LNG, equivalent to roughly 60% of the receiving vessel's total capacity.

"This first European port call for *Eagle Brasilia* and *Eagle Bintulu*, coupled with the vessel's exciting first LNG bunkering, is a momentous success for AET in driving LNG as a cleaner burning and viable fuel for the shipping industry and in turn, spurring other shipping companies to work towards achiev-

ing IMO's minimum 2050 emissions reduction target," Ron Wood, Global Director, Mid-Size Tankers Crude Shipping, AET, commented.

3,600-mile range

AET has been a strong supporter of LNG as a fuel for shipping and the *Brasilia* and *Bintulu* are one of the first LNG-fuelled Aframax on the seas. In total, AET has ordered four new LNG-fuelled Aframax tankers from Samsung Heavy Industries (SHI).

Thanks to the innovative design

of the new Aframax vessels, each of the dual-fuel tankers can achieve "considerable trade mileage of approximately 3,600 nautical miles" on LNG alone, according to estimates from AET.

"These new vessels represent a milestone for AET, the tanker sector and the commercial shipping industry as a whole... By choosing the LNG option, AET has raised the bar and it will be only a matter of time before other operators follow," Dae-young Park, CEO of SHI, commented.

Cheaper alternative

While the tankers have largely been as a more environmentally benign option, AET also expects them to provide operational savings as well as tougher regulation adds to the cost associated with traditional fuel oil.

"Currently, LNG is considered a cheaper and eco-friendlier alternative than low sulphur oil and scrubber over long term, to meet the IMO 2020 regulations that require the reduction of Sulphur Oxide (SOx) emissions from 1.5% to 0.5%," a spokesperson for AET commented.

A wholly owned subsidiary of Malaysian energy shipping corporation MISC Berhad, AET anticipates "significant growth" in the global fleet of LNG-fuelled vessels in parallel with an increase in LNG bunkering infrastructure. ■



Eagle Bintulu

Wes Amelie completes bunkering first

LNG-fuelled container feeder vessel *Wes Amelie* has completed a world first ship-to-ship refuelling operation, having bunkered with the world's largest LNG supply vessel *Kairos* in Sweden.

The operation was completed at anchorage off the coast of Visby, Sweden and was carried out by fuelling specialist Nauticor in collaboration with owner Wessels Reederei and operator Unifeeder. It marks the first ship-to-ship LNG bunker operation for a retrofitted container vessel in the Baltic.

"We are proud that in cooperation with Unifeeder and Wessels Reederei we have been able to provide a state-of-the-art ship-to-ship LNG fuelling solution for *Wes Amelie*. The successful operation proves again that LNG is becoming a fuel for all segments in the shipping sector and that the availability of the molecules is secured in Northwest Europe," Mahinde Abeynaike, CEO of Nauticor, said.

STS supply chain development important

The *Wes Amelie* was the first of

its kind to be retrofitted in 2017 and has since worked a feeder route between Rotterdam and the Baltics. It is operated by Unifeeder as part of its feeder and shortsea network, the largest in Europe.

"We are glad that the first LNG ship-to-ship transfer for the "*Wes Amelie*" went well, due to the smooth cooperation between the ship's crew, the Nauticor experts and our bunker team here at Unifeeder. As one of the first movers in the use of LNG as fuel for container vessels, we have a substantial interest in developing a comprehensive LNG supply infrastructure. The development of ship-to-ship supply chains, such as the one offered by Nauticor with "*Kairos*", is an important step towards a more efficient LNG distribution," Hans Staal, Head of Bunker Procurement of Unifeeder, commented.

LNG "an elementary component"

Wessels Marine, a subsidiary of Wessels Reederei, now expects further implementation of LNG as a marine fuel in the container feeder segment and ship-to-ship LNG bunkering more generally, calling the fuel "an elementary component" of future development.

"We are working on a number of similar projects to rapidly expand the fleet of eco-friendly vessels converted to LNG... Wes

Amelie has convincingly shown that the use of LNG substantially benefits the environment along the feeder routes and raises advantages for the operators," Christian Hoepfner, Managing Director of Wessels Marine, said.

One of the largest German management companies for coasters, Wessels Reederei is based in Haren/Ems in Lower Saxony and operates a fleet of 20 coasters, four container ships, and six multi-purpose freighters. ■



Wes Amelie

LNG-fuelled icebreaker *Polaris* bunkers in Finland

The world's first LNG-fuelled icebreaker vessel, *Polaris*, has completed bunkering operations in Finland, ahead of planned operation in the Arctic.

The vessel docked at the Pori LNG import terminal at the start of the year shortly followed by a call at the Manga LNG terminal located in the Röyttä Harbor in Tornio, Finland. Bunkering was completed by Finnish fuel specialist Gasum.

"We've already supplied LNG for northern ports such as Luleå, Sweden, and Kemi and Oulu, Finland. *Polaris* is the first vessel bunkered in Tornio," Tommy Mattila, Sales and Marketing Director for Natural Gas and LNG at Gasum, said.

"Important competitiveness factor"

The arrival of *Polaris* marked one of the first operations at Tornio since it opened commercially at the start of this year and Gasum predicts that LNG will be an "im-

portant competitiveness factor" for current industrial operators in the area as well as for the Port of Tornio.

"LNG is excellently suited for use as a marine fuel as it's a great alternative to oil, and being environmentally friendly is one of its strengths... The start of the commercial use of the Tornio Manga LNG terminal strengthens Gasum's LNG supply chain in Northern Finland and Sweden for industry and maritime transport," Mattila states.

Supporting shipping and road transport

Gasum expects the Tornio terminal to benefit both shipping and road transportation companies as well as utilities and other industrial and



Polaris bunkering

mining companies in northern Europe as part of a long-term infrastructure investment programme.

The *Polaris* uses LNG as the primary fuel and diesel as a reserve fuel and "represents a new generation of Baltic Sea icebreakers", according to Esko Mustamäki, managing director of Arctech Helsinki Shipyard, which built the *Polaris*. Utilizing a special hull design and propulsion

arrangement, the vessel has one of the best icebreaking capacities in the Baltic Sea as well as excellent manoeuvrability.

Gasum LNG strategy progresses

As the transmission system operator of the natural gas grid of Finland, and also the natural gas importer and seller, Gasum has been well placed to drive LNG fuelling infrastructure in the region.

Last year, the group acquired partner Lyse Group's share in LNG joint venture Skangas, increasing its shareholding to 100% as it aims to "further enhance" the development of the Nordic gas market and LNG distribution network.

"The need for cleaner fuel solutions in industry and transport is increasing significantly, and LNG is the most competitive option for low-emission fuels. We want to be the frontrunner in taking the Nordic countries to a cleaner tomorrow," Johanna Lamminen, CEO of Gasum, commented. ■



Tornio terminal and *Polaris*

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BUA selects LNG to power Nigerian cement line

Infrastructure provider BUA Group is to utilise LNG fuel to power a new cement production facility under construction in Nigeria.

The new plant will be built in Sokoto, in northwest Nigeria, and feature 48 megawatt capacity, with the capability to operate without connection to grid. Once complete it will provide power to the new cement line number 3 at the existing Sokoto cement production facility.

Smart Power Generation technology

Finnish equipment manufacturer Wärtsilä will provide five of its 34DF dual-fuel engines to power the site, connected via its Smart Power Generation technology.

"We can't compromise on quality. We are known to provide quality products and services, and we recognise that Wärtsilä aligns with this vision of ours. They have an impeccable track record and can

be relied on to deliver as promised. We also look forward to the opportunities this project will create for the local community and its economy," Abdul Samad Rabi, CEO of the BUA Group, said.

Headquartered in Lagos, Nigeria, BUA Group is one of Nigeria's largest diversified industrial groups and operates subsidiaries in Nigerian and across Sub-Saharan Africa ranging from cement production, oil mills and sugar refining to real estate, ports and terminals.

Operational mid-2020

The dual-fuel engines will run primarily on LNG with the capability to switch to low pour fuel oil (LPFO) if necessary, lowering environmental impact while retaining flexibility and redundancy. All five



Magnus Miemoi and Abdul Samad Rabi

engines are scheduled for delivery by the end of 2019, with the new plant set to become operational in mid-2020.

"Wärtsilä was able to offer an attractive value proposition that includes superior technology, high efficiency, and the ability to deliver the needed fuel flexibility. We are particularly proud to be partnering with BUA in this pro-

ject, since they are a dominant player in the Nigerian economy and a major cement producer," Magnus Miemoi, Regional Director at Wärtsilä Energy Business, said.

The new contract brings Wärtsilä's total installed base in Nigeria to 650 megawatt and more than 7,200 megawatts in Africa, with a significant proportion already using LNG or LNG-ready. ■

FueLNG marks Singapore LNG bunkering milestone

Joint venture bunker specialist FueLNG has completed its 100th LNG bunkering operation in Singapore, setting "a new industry milestone" for the island state.

The bunkering operation was carried out with no loss-time incidents, and in accordance with the Technical reference (TR) 56 standard for LNG bunkering in Singapore.

"This milestone is testament to FueLNG's ability to provide safe, cost-efficient and reliable LNG bunkering for our clients. We are optimistic that the industry will increasingly adopt LNG as a marine fuel and look forward to furthering our partnership with industry stakeholders to build a

world-class LNG bunkering network in Singapore," Chris Ong, Chairman of FueLNG, said.

Good progress in LNG bunkering

A joint venture between Singapore conglomerate Keppel and Dutch energy firm Shell Eastern Petroleum, FueLNG has been providing truck-to-ship LNG bunkering for two dual-fuel tugs since May 2018 and is also able to provide LNG for the commissioning of LNG systems and machinery, and trials

for gas-fuelled vessels.

"We are pleased to see good progress in LNG bunkering in Singapore. We hope that this would strengthen Singapore's offering as a global maritime hub and bunkering port. We will continue to work through local and international partnerships to increase the viability of LNG as a marine fuel for the future." Quah Ley Hoon, Chief Executive of the Maritime and Port Authority of Singapore (MPA), said.

Both of the LNG-fuelled tugs under contract with FueLNG are operated by Keppel Smit Towage.

New bunkering vessel in 2020

Following the successful completion of 12 months of bunkering operations, the joint venture partners are now looking to expand activity with Shell scheduled to receive a new LNG bunkering vessel next year.

"The delivery of our LNG bunkering vessel in 2020 is an im-

portant step for growing a robust and reliable global LNG fuel supply chain in the years to come as we will be able to increase the availability of LNG with ship-to-ship services for our end clients," Tahir Faruqi, Director of FueLNG and Head of Shell Global Downstream LNG, explained.

According to data captured by Keppel Smit Towage over the last 12 months, both tugs in the trial perform as efficiently as when using diesel, but consume 5% less fuel in tonnes.

"We are glad to be one of the leaders in the adoption of LNG as a marine fuel, which has enabled us to not only reduce sulphur oxide emissions but increase our cost-efficiency. This milestone proves the commercial and operational viability of LNG, and we look forward to continuing the partnership with FueLNG to enhance bunkering standards and operations," Romi Kaushal, Managing Director of Keppel Smit Towage, said. ■



Truck-to-Ship LNG bunkering

Pavilion charters Singapore LNG bunker vessel

Singapore state-owned developer Pavilion Energy has chartered its first LNG bunker vessel for the supply of LNG in the Port of Singapore.

The vessel is the largest LNG bunker vessel set for use in the Port of Singapore to date and will be owned by Japanese shipping line Mitsui O.S.K. Lines (MOL).

"Pavilion Energy has made substantial headway that will see us supply a cleaner and more sustainable bunker fuel in the Port of Singapore. The strategic partnerships with Total and MOL reinforce our commitment to develop robust LNG bunker supply solutions in Singapore as our home base," Frédéric H. Barnaud, Group CEO of Pavilion Energy, said.



Pavilion Energy representatives at signing ceremony

Collaboration with Sinanju

The charter will be jointly managed by MOL in collaboration with Sinanju, a local bunker tanker operator in Singapore, with additional financial support from a S\$3 million grant issued by the Maritime and Port Authority of Singapore (MPA).

"We would like to express our appreciation to MPA and our partners for their strong support behind this important milestone to realise LNG as marine fuel in Singapore."

Awarded to Pavilion Energy

under MPA's LNG Bunker Vessel Co-Funding Grant the funding will assist in the construction costs for the dual-fuel vessel, which will be carried out by Sembcorp Marine at its shipyard in Singapore.

GTT Mark III Flex membrane

The next generation design will feature a GTT Mark III Flex membrane with capacity for 12,000 cubic metre of fuel as well as a state-of-the-art hull with twin membrane LNG cargo tanks for more efficient boil-off gas management. Scheduled for delivery

in early 2021, the vessel can act as both LNG feeder and bunker tanker for coastal and short sea trade.

"As the world's largest bunkering port, we are pleased to support the building of this LNG bunker vessel. We look forward to this collaboration catering to growing future demand for ship-to-ship LNG bunkering in the Port of Singapore," Quah Ley Hoon, Chief Executive of MPA, said.

The bunker vessel charter follows a deal between Pavilion Energy and French energy firm Total last year for the co-share

utilisation of the vessel alongside LNG bunker deliveries to both Pavilion Energy's and Total's marine fuel customers in the Port of Singapore.

"Pavilion Energy is at the forefront of change for cleaner and more responsible solutions with LNG bunkering. With our proven capabilities and global partnerships, our customers can look forward to reliable and competitive LNG bunker logistics and supplies that are readily available in Singapore, regionally and globally," Pavilion said in a statement. ■



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Inner Mongolia, China

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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	Aman Hakata	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	Norgas Creation	10,000	LNG/LPG/Ethylene	Worldwide	No	Norgas Carriers
2010	Norgas Innovation	10,000	LNG/LPG/Ethylene	Worldwide	No	Norgas Carriers
2011	Akebono Maru	3,556	LNG	Japan	Yes	Chuo Kaiun
2011	Norgas Conception	10,000	LNG/LPG/Ethylene	Worldwide	No	Norgas Carriers
2011	Norgas Invention	10,000	LNG/LPG/Ethylene	Worldwide	No	Norgas Carriers
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
2014	LNG-Oil combi**	2,000	LNG	Germany	Yes	Veka
2014	Short Sea LNG Tanker **	4,000	LNG	Germany	Yes	Veka
2015	LNG Inland bunker**	800	LNG	Germany	Yes	Veka
2015	LNG bunker barge 1†	2,250	LNG	China	Yes	Anhui Huaqiang Natural Gas
2015	LNG bunker barge 2†	2,250	LNG	China	Yes	Anhui Huaqiang Natural Gas
2015	LNG bunker barge 3†	2,250	LNG	China	Yes	Anhui Huaqiang Natural Gas
2015	LNG Barge TBN	3,000	LNG	US Coast	Yes	LNG America
2015	10 small carriers TBN**	5,000	LNG			Bimantara Group
2015	Jahre TBN**	6,200	LNG	Norway	Yes	Donsotank/Jahre Marine
2015	Norgas TBN**	17,000	LNG/LPG/Ethylene	Worldwide		Norgas Carriers
2015	Norgas TBN**	17,000	LNG/LPG/Ethylene	Worldwide		Norgas Carriers
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	TBN 1	27,500	LNG	China?		Danyang?
2015	TBN 2	27,500	LNG	China?		Danyang?
2015	TBN 3	27,500	LNG	China?		Danyang?
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)
2016	Navigator Aurora	35,000	Ethane/Ethylene	Markus Hood - Stenungsund	Ethane, for Borealis	Navigator
2016	Gaschem Beluga	36,000	Ethane/Ethylene	US - Teeside	Ethane, for Sabic	Gaschem Services
2016	Gaschem Orca	36,000	Ethane/Ethylene	US - Teeside	Ethane, for Sabic	Gaschem Services

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

TBN = To Be Nominated indicates ships are still at construction/planning stage

** = project shelved † = Data to be verified Data last updated = 30th April 2019

Built	Name	CBM	Cargo Type	Trading area	Trading in LNG?	Ship Owner / Operator
2016	Ocean Yield TBN**	36,000	Ethane/Ethylene	US - Teeside	Ethane, for Sabic	Gaschem Services
2017	Oizmendi	600	LNG	Bilbao	Yes	Itsas Gas
2017	CME TBN†	2,200	LNG	US Coast	Yes	CME
2017	CME TBN†	2,200	LNG	US Coast	Yes	CME
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
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	Yuan He 1	30,000	LNG	China	Yes	CSR
2017	Navigator Eclipse	35,000	Ethane/Ethylene	US	Ethane	Navigator
2017	Navigator Nova	35,000	Ethane/Ethylene	US	Ethane	Navigator
2017	Navigator Prominence	35,000	Ethane/Ethylene	US	Ethane	Navigator
2018	HUA XIANG 8	13,720	LNG	China	Yes	Zhejiang Huaxiang
2018	CME TBN†	2,200	LNG	US Coast	Yes	CME
2018	Shell Bunker Barge TBN 4	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	Evergas TBN	32,000	Ethane/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2018	Evergas TBN	32,000	Ethane/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2018	Evergas TBN	32,000	Ethane/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2018	Evergas TBN	32,000	Ethane/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
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
2020	Shell Bunker Barge	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	Total TBN	18,600	LNG	NWE	Yes	MOL
2020	FuelLNG TBN	7,500	LNG	Singapore	Yes	FuelLNG
2020	CLS TBN	3,500	LNG	Japan	Yes	CLS
2020	Eesti Gaas TBN	6,000	LNG	NWE	Yes	Eesti Gaas
2020	ENN TBN	8,500	LNG	China	Yes	ENN
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
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

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

TBN = To Be Nominated indicates ships are still at construction/planning stage

** = project shelved † = Data to be verified Data last updated = 30th April 2019

WORLD LNG-FUELLED CONFIRMED NEWBUILDS

Year of delivery	Ship name	Ship type	Shipowner	Area of operation	Class
2019	AIDA	Cruise ships	Aida Cruises	Global	RINA
2019	Bonny River	Other activities	DEME	Europe	BV
2019	Costa Smeralda	Cruise ships	Costa Crociere	Global	RINA
2019	Elemarateyah	Tugs	Drydocks World	Middle East	Tasneef
2019	Færøy	Car/Passenger ferries	Torghatten	Norway	DNV GL
2019	Ferus smit 444	Oil/Chemical tankers	Thun Tankers	Europe	BV
2019	Ferus smit 451	Oil/Chemical tankers	Thun Tankers	Europe	BV
2019	Ferus smit 452	Oil/Chemical tankers	Thun Tankers	Europe	BV
2019	Ferus Smit 453	Bulk carriers	Erik Thun	Europe	LR
2019	Flatøy	Car/Passenger ferries	Torghatten	Norway	DNV GL
2019	Greenports 1	Other activities	Bremenports	Europe	DNV GL
2019	Harvey Patriot	Offshore supply ships	Harvey Gulf International Marine	America	ABS
2019	Honfleur	RoPax	Brittany Ferries	Europe	BV
2019	Huftarøy	Car/Passenger ferries	Torghatten	Norway	DNV GL
2019	Hypatia de Alejandria	RoPax	Baleària	Europe	Unknown
2019	Jos-Deschenes II	Car/Passenger ferries	Society of Quebec ferries	America	LR
2019	Ishin	Tugs	Mitsui O.S.K. Lines	Asia	Unknown
2019	L'Ostrea	Other activities	Dragages-Ports	Europe	Unknown
2019	Libas	Fishing vessels	Liegruppen	Norway	Unknown
2019	Lysøy	Car/Passenger ferries	Torghatten	Norway	DNV GL
2019	Marie Curie	RoPax	Baleària	Europe	Unknown
2019	Orion	Other activities	DEME	Europe	DNV GL
2019	PX 1098	Tugs	PSA Marine	Asia	--
2019	Rossi A. Desgagnés	Oil/Chemical tankers	Groupe Desgagnés	America	BV
2019	Samnøy	Car/Passenger ferries	Torghatten	Norway	DNV GL
2019	Samsung 2236	Crude oil tankers	AET	Global	DNV GL
2019	Samsung 2237	Crude oil tankers	AET	Global	DNV GL
2019	Samsung 2241	Crude oil tankers	Teekay	Global	DNV GL
2019	Siem Confucius	Car carriers	Siem Car Carriers	Global	ABS
2019	Siem Melody	Offshore supply ships	Siem Offshore	Norway	DNV GL
2019	Siem Rhapsody	Offshore supply ships	Siem Offshore	Norway	DNV GL
2019	Sleipnir	General cargo ships	Heerema Offshore Services	Global	LR
2019	Spartacus	Other activities	DEME	Europe	BV
2019	TBN	General cargo ships	SeOil Agency/Gas Entec	Global	Unknown
2019	TBN	Oil/Chemical tankers	Sinanju Tankers	Asia	Unknown
2019	TBN	RoPax	Baleària	Europe	BV
2019	TBN	RoPax	Rederi AB Gotland	Europe	DNV GL
2019	TBN 1	Car carriers	Siem Car Carriers	Global	ABS
2019	TBN 1	Car/Passenger ferries	Clyde and Hebrides Ferry Service (CHFS)		EuropeLR
2019	TBN 1	Car/Passenger ferries	Royal Doeksen	Europe	LR
2019	TBN 1	Crude oil tankers	AET	Global	ABS
2019	TBN 1	Oil/Chemical tankers	Älvtank	Europe	BV
2019	TBN 1	Oil/Chemical tankers	Harley Marine Services Singapore	Asia	Unknown
2019	TBN 1	Other activities	German Transport Ministry	Europe	Unknown
2019	TBN 1	Tugs	Ningbo Zhoushan Port Co.	Asia	CSS
2019	TBN 2	Car/Passenger ferries	Clyde and Hebrides Ferry Service (CHFS)		EuropeLR
2019	TBN 2	Car/Passenger ferries	Royal Doeksen	Europe	LR
2019	TBN 2	Container ships	Containerships	Europe	ABS

Excluding LNG carriers and inland waterway vessels. For more information please visit www.dnvgl.com
Data last updated : 29 January 2019

Year of delivery	Ship name	Ship type	Shipowner	Area of operation	Class
2019	TBN 2	Crude oil tankers	AET	Global	ABS
2019	TBN 2	Oil/Chemical tankers	Älvtank	Europe	BV
2019	TBN 2	Oil/Chemical tankers	Furetank Rederi	Europe	BV
2019	TBN 2	Oil/Chemical tankers	Harley Marine Services Singapore	Asia	Unknown
2019	TBN 2	Other activities	German Transport Ministry	Europe	Unknown
2019	TBN 3	Container ships	Containerships	Europe	ABS
2019	TBN 4	Container ships	CMA CGM	Global	BV
2019	TBN 4	Container ships	Containerships	Europe	ABS
2019	TBN 4	Crude oil tankers	SCF	Europe	DNV GL
2019	TBN 5	Crude oil tankers	SCF	Europe	DNV GL
2019	TBN 6	Crude oil tankers	SCF	Europe	DNV GL
2019	Bencomo Express	Car/Passenger ferries	Fred. Olsen	Europe	DNV GL
2019	Napoles	RoPax	Baleària	Europe	RINA
2019	Samuel de Champlain	Other activities	Dragages-Ports	Europe	BV
2019	Sicilia	RoPax	Baleària	Europe	RINA
2019	Spirit of Vancouver Island	Car/Passenger ferries	BC Ferries	America	ABS
2020	Atair	Other activities	German Transport Ministry	Europe	DNV GL
2020	Brodosplit 476	Container ships	Brodosplit Shipping Company	Europe	DNV GL
2020	Samsung 2242	Crude oil tankers	Teekay	Global	DNV GL
2020	Samsung 2256	Crude oil tankers	Teekay	Global	DNV GL
2020	Samsung 2257	Crude oil tankers	Teekay	Global	DNV GL
2020	Samsung 2286	Crude oil tankers	Teekay	Global	DNV GL
2020	TBN	Container ships	Brodosplit Shipping Company	Europe	DNV GL
2020	TBN 1	Container ships	Brodosplit Shipping Company	Europe	DNV GL
2020	TBN 1	Container ships	CMA CGM	Global	BV
2020	TBN 1	Container ships	Pasha Hawaii	America	Unknown
2020	TBN 1	Cruise ships	Carnival Corporation	Global	RINA
2020	TBN 1	Cruise ships	P&O Cruises	Global	RINA
2020	TBN 1	Fishing vessels	Nordlaks	Norway	DNV GL
2020	TBN 1	Oil/Chemical tankers	SCF	Global	RS
2020	TBN 2	Container ships	Brodosplit Shipping Company	Europe	DNV GL
2020	TBN 2	Container ships	CMA CGM	Global	BV
2020	TBN 2	Container ships	Pasha Hawaii	America	Unknown
2020	TBN 2	Oil/Chemical tankers	SCF	Global	RS
2020	TBN 3	Container ships	CMA CGM	Global	BV
2020	TBN 3	Oil/Chemical tankers	SCF	Global	RS
2020	TBN 5	Container ships	Containerships	Europe	ABS
2020	TBN 6	Container ships	CMA CGM	Global	BV
2020	TBN 6	Container ships	Containerships	Europe	ABS
2020	TBN 7	Container ships	CMA CGM	Global	BV
2020	TBN 8	Container ships	CMA CGM	Global	BV
2020	TBN 9	Container ships	CMA CGM	Global	BV
2020	TBN High Speed Catamaran	Car/Passenger ferries	Baleària	Europe	BV
2020	Xiamen	RoPax	Viking Line	Europe	DNV GL
2020	Kong Harald	Cruise ships	Hurtigruten	Norway	DNV GL
2020	Nordkapp	Cruise ships	Hurtigruten	Norway	DNV GL
2020	Nordnorge	Cruise ships	Hurtigruten	Norway	DNV GL

Year of delivery	Ship name	Ship type	Shipowner	Area of operation	Class
2021	Avic Weihai W268	RoPax	Stena	Europe	DNV GL
2021	Costa	Cruise ships	Costa Crociere	Global	RINA
2021	Havila Polaris	Cruise ships	Havila Kysttruten	Norway	--
2021	Havila Pollux	Cruise ships	Havila Kysttruten	Norway	--
2021	Ponant Icebreaker	Cruise ships	Ponant	Global	BV
2021	Samsung 2287	Crude oil tankers	Teekay	Global	DNV GL
2021	TBN 1	Bulk carriers	H-Line	Global	DNV GL/KR
2021	TBN 1	Crude oil tankers	Rosneft	Europe	RR
2021	TBN 1	Cruise ships	Disney Cruise Lines	Global	LR
2021	TBN 1	Cruise ships	Havila Kysttruten	Norway	DNV GL
2021	TBN 1	Oil/Chemical tankers	Donsötank	Global	--
2021	TBN 1	Other activities	Van Oord	Global	BV
2021	TBN 1	RoPax	TT Line Co Pty Ltd	Oceania	LR
2021	TBN 2	Bulk carriers	H-Line	Global	DNV GL/KR
2021	TBN 2	Crude oil tankers	Rosneft	Europe	RR
2021	TBN 2	Cruise ships	Havila Kysttruten	Norway	DNV GL
2021	TBN 2	Fishing vessels	Nordlaks	Norway	--
2021	TBN 2	Oil/Chemical tankers	Donsötank	Global	--
2021	TBN 2	Other activities	Van Oord	Global	BV
2021	TBN 2	RoPax	TT Line Co Pty Ltd	Oceania	LR
2021	TBN 3	Crude oil tankers	Rosneft	Europe	RR
2021	TBN 4	Crude oil tankers	Rosneft	Europe	RR
2021	TBN 5	Container ships	CMA CGM	Global	BV
2021	TBN 5	Crude oil tankers	Rosneft	Europe	RR
2021	Midnight Sun	Ro-Ro cargo ships	TOTE Shipholdings	America	ABS
2021	Nordlys	Cruise ships	Hurtigruten	Norway	DNV GL
2021	North Star	Ro-Ro cargo ships	TOTE Shipholdings	America	ABS
2021	Polarlys	Cruise ships	Hurtigruten	Norway	DNV GL
2021	Richard With	Cruise ships	Hurtigruten	Norway	DNV GL
2022	Icon of the Seas	Cruise ships	RCCL	Global	DNV GL
2022	TBN	RoPax	TT-Line GmbH	Europe	--
2022	TBN 1	Cruise ships	MSC Cruises	Global	BV
2022	TBN 1	RoPax	Polish Baltic Shipping Company	Europe	Unknown
2022	TBN 2	Cruise ships	Carnival Corporation	Global	RINA
2022	TBN 2	Cruise ships	Disney Cruise Lines	Global	LR
2022	TBN 2	Cruise ships	P&O Cruises	Global	RINA
2023		Cruise ships	Aida Cruises	Global	RINA
2023	TBN 1	Cruise ships	Princess Cruises	Global	Unknown
2023	TBN 3	Cruise ships	Disney Cruise Lines	Global	LR
2023	TBN 3	Cruise ships	MSC Cruises	Global	BV
2024	TBN	Cruise ships	RCCL	Global	DNV GL
2024	TBN 1	Cruise ships	TUI Cruises	Global	Unknown
2024	TBN 2	Cruise ships	MSC Cruises	Global	BV
2025	TBN 2	Cruise ships	Princess Cruises	Global	Unknown
2026	TBN 2	Cruise ships	TUI Cruises	Global	Unknown

LNG-FUELLED SHIPS IN OPERATION WORLDWIDE

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

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* = conversion projects

Year of delivery	Ship name	Ship type	Shipowner	Area of operation	Class
2014	Coral Sticho	Gas tankers	Anthony Veder	Europe	BV
2014	Rem Eir	Offshore supply ships	Remøy Shipping	Norway	DNV GL
2014	Siem Symphony	Offshore supply ships	Siem Offshore	Norway	DNV GL
2014	Turva	Other activities	Finnish Border Guard	Europe	DNV GL
2014	With Harvest	General cargo ships	Egil Ulvan Rederi	Norway	DNV GL
2014	With Marine	General cargo ships	Egil Ulvan Rederi	Norway	DNV GL
2015	F.A. Gauthier	Car/Passenger ferries	Society of Quebec ferries	America	LR
2015	Greenland	Bulk carriers	Erik Thun	Europe	LR
2015	Hai Yang Shi You 525	Tugs	CNOOC	Asia	CCS
2015	Harvey Energy	Offshore supply ships	Harvey Gulf International Marine	America	ABS
2015	Harvey Power	Offshore supply ships	Harvey Gulf International Marine	America	ABS
2015	Helgoland	Car/Passenger ferries	AG EMS	Europe	DNV GL
2015	JS Ineos Ingenuity	Gas tankers	Evergas	Global	BV
2015	JS Ineos Insight	Gas tankers	Evergas	Global	BV
2015	JS Ineos Intrepid	Gas tankers	Evergas	Global	BV
2015	Kvitbjørn	Ro-Ro cargo ships	Nor Lines	Norway	DNV GL
2015	Perla del Caribe	Container ships	TOTE Shipholdings	America	ABS
2015	Kvitnos	Ro-Ro cargo ships	Nor Lines	Norway	DNV GL
2015	Prinsesse Isabella	Car/Passenger ferries	Samsøe municipality	Europe	DNV GL
2015	Sakigake	Tugs	NYK	Asia	NK
2015	Sefarina	Gas tankers	Chemgas Shipping	Europe	BV
2015	Siem Pride	Offshore supply ships	Siem Offshore	Norway	DNV GL
2015	Stril Barents	Offshore supply ships	Simon Møkster Shipping	Norway	DNV GL
2015	Bergen Viking	Oil/Chemical tankers	Bergen Tankers	Norway	LR
2015	Fure West	Oil/Chemical tankers	Furetank Rederi	Europe	BV
2015	Ostfriesland	Car/Passenger ferries	AG EMS	Europe	DNV GL
2016	Auto Eco	Car carriers	UECC	Europe	DNV GL
2016	Auto Energy	Car carriers	UECC	Europe	DNV GL
2016	Bergsfjord	Car/Passenger ferries	Boreal Transport Nord	Norway	DNV GL
2016	Hai Yang Shi You 526	Tugs	CNOOC	Asia	CCS
2016	Harvey Liberty	Offshore supply ships	Harvey Gulf International Marine	America	ABS
2016	Hasvik	Car/Passenger ferries	Boreal Transport Nord	Norway	DNV GL
2016	Ireland	Bulk carriers	Erik Thun	Europe	LR
2016	Isla Bella	Container ships	TOTE Shipholdings	America	ABS
2016	Js Ineos Innovation	Gas tankers	Evergas	Global	BV
2016	JS Ineos Inspiration	Gas tankers	Evergas	Global	BV
2016	Navigator Eclipse	Gas tankers	Navigator Gas	Global	ABS
2016	Salish Orca	Car/Passenger ferries	BC Ferries	America	LR
2016	Polaris	Other activities	Arctia Shipping	Europe	LR
2016	Searoad Mersey II	Ro-Ro cargo ships	Searoad Holdings	Oceania	DNV GL
2016	Seaspan Swift	Car/Passenger ferries	Seaspan Ferries Corporation	America	BV
2016	Siem Thiima	Offshore supply ships	Siem Offshore	Oceania	DNV GL
2016	Sundowner	Gas tankers	Chemgas Shipping	Europe	BV
2016	Tern Sea	Oil/Chemical tankers	Terntank	Europe	BV
2016	Ternfjord	Oil/Chemical tankers	Terntank	Norway	BV
2016	Ternsund	Oil/Chemical tankers	Terntank	Norway	BV
2017	Audax	Tugs	Østensjø Rederi	Norway	BV
2017	Damia Desgagnés	Oil/Chemical tankers	Groupe Desgagnés	Global	BV
2017	Dux	Tugs	Østensjø Rederi	Norway	BV
2017	Gaschem Beluga	Gas tankers	Ocean Yield	Global	DNV GL
2017	Gaschem Orca	Gas tankers	Ocean Yield	Global	DNV GL
2017	Harvey Freedom	Offshore supply ships	Harvey Gulf International Marine	America	ABS

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Year of delivery	Ship name	Ship type	Shipowner	Area of operation	Class
2017	Js Ineos Independence	Gas tankers	Evergas	Global	BV
2017	JS Ineos Intuition	Gas tankers	Evergas	Global	BV
2017	JS Ineos Invention	Gas tankers	Evergas	Global	BV
2017	Megastar	RoPax	Tallink	Europe	BV
2017	Mia Desgagnés	Oil/Chemical tankers	Groupe Desgagnés	America	BV
2017	Minerva	Other activities	DEME	Europe	BV
2017	Navigator Nova	Gas tankers	Navigator Gas	Global	ABS
2017	Navigator Prominence	Gas tankers	Navigator Gas	Global	ABS
2017	Pax	Tugs	Østensjø Rederi	Norway	BV
2017	Salish Eagle	Car/Passenger ferries	BC Ferries	America	LR
2017	Salish Raven	Car/Passenger ferries	BC Ferries	America	LR
2017	Scheldt River	Other activities	DEME	Europe	BV
2017	Seaspan Reliant	Car/Passenger ferries	Seaspan Ferries Corporation	America	BV
2017	Tern Ocean	Oil/Chemical tankers	Termtank	Europe	BV
2017	Abel Matutes	RoPax	Baleària	Europe	BV
2017	Wes Amelie	Container ships	Wessels Reederei	Europe	BV
2018	Aidanova	Cruise ships	Aida Cruises	Global	RINA
2018	Armand-Imbeau II	Car/Passenger ferries	Society of Quebec ferries	America	LR
2018	Containerships Nord	Container ships	Containerships	Europe	ABS
2018	Ecodelta	Other activities	van der Kamp	Europe	DNV GL
2018	El Coquí	Container ships	Crowley Maritime Corporation	America	DNV GL
2018	Elio	Car/Passenger ferries	Caronte & Tourist	Europe	RINA
2018	Fure Valö	Oil/Chemical tankers	Furetank Rederi	Europe	BV
2018	Fure Vinga	Oil/Chemical tankers	Furetank Rederi	Europe	BV
2018	Gagarin Prospect	Crude oil tankers	SCF	Europe	DNV GL
2018	Haaga	Bulk carriers	ESL Shipping	Europe	DNV GL
2018	Harvey America	Offshore supply ships	Harvey Gulf International Marine	America	ABS
2018	Ilshin Green Iris	Bulk carriers	Ilshin	Asia	LR
2018	KST Liberty	Tugs	Keppel Smit Towage (Boskalis)	Asia	ABS
2018	Livingstone	Other activities	DEME Tideway	Europe	DNV GL
2018	Lomonosov Prospect	Crude oil tankers	SCF	Europe	DNV GL
2018	Maju Loyalty	Tugs	Maju Maritime (Boskalis)	Asia	ABS
2018	Nyksund	General cargo ships	Nordnorsk Shipping	Norway	DNV GL
2018	Mendelev Prospect	Crude oil tankers	SCF	Europe	DNV GL
2018	Paul A. Desgagnés	Oil/Chemical tankers	Groupe Desgagnés	America	BV
2018	Taíno	Container ships	Crowley Maritime Corporation	America	DNV GL
2018	Thun Eos	Oil/Chemical tankers	Thun Tankers	Europe	BV
2018	Thun Verner	Oil/Chemical tankers	Thun Tankers	Europe	BV
2018	Viikki	Bulk carriers	ESL Shipping	Europe	DNV GL
2018	Visborg	RoPax	Rederi AB Gotland	Europe	DNV GL
2018	Spirit of British Columbia	Car/Passenger ferries	BC Ferries	America	ABS
2019	AIDA	Cruise ships	Aida Cruises	Global	RINA
2019	Costa Smeralda	Cruise ships	Costa Crociere	Global	RINA
2019	Eagle Bintulu	Crude oil tankers	AET	Global	ABS
2019	Eagle Brasília	Crude oil tankers	AET	Global	ABS
2019	Elemarateyah	Tugs	Drydocks World	Middle East	Tasneef
2019	Færøy	Car/Passenger ferries	Torghatten	Norway	DNV GL
2019	Ferus smit 444	Oil/Chemical tankers	Thun Tankers	Europe	BV
2019	Ferus smit 451	Oil/Chemical tankers	Thun Tankers	Europe	BV
2019	Ferus smit 452	Oil/Chemical tankers	Thun Tankers	Europe	BV
2019	Ferus Smit 453	Bulk carriers	Erik Thun	Europe	LR
2019	Flatøy	Car/Passenger ferries	Torghatten	Norway	DNV GL

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Year of delivery	Ship name	Ship type	Shipowner	Area of operation	Class
2019	Fure Ven	Oil/Chemical tankers	Furetank Rederi	Europe	BV
2019	Glen Sannox	Car/Passenger ferries	Clyde and Hebrides Ferry Service (CHFS)		Europe LR
2019	Greenports 1	Other activities	Bremenports	Europe	DNV GL
2019	Harvey Patriot	Offshore supply ships	Harvey Gulf International Marine	America	ABS
2019	Honfleur	RoPax	Brittany Ferries	Europe	BV
2019	Hypatia de Alejandria	RoPax	Baleària	Europe	RINA
2019	Huftarøy	Car/Passenger ferries	Torghatten	Norway	DNV GL
2019	Ishin	Tugs	Mitsui O.S.K. Lines	Asia	Unknown
2019	Jos-Deschenes II	Car/Passenger ferries	Society of Quebec ferries	America	LR
2019	Korolev Prospect	Crude oil tankers	SCF	Europe	DNV GL
2019	L'Ostrea	Other activities	Dragages-Ports	Europe	BV
2019	Libas	Fishing vessels	Liegruppen	Norway	Unknown
2019	Lysøy	Car/Passenger ferries	Torghatten	Norway	DNV GL
2019	Orion	Other activities	DEME	Europe	DNV GL
2019	Marie Curie	RoPax	Baleària	Europe	Unknown
2019	PX 1098	Tugs	PSA Marine	Asia	BV
2019	Ramanda	Oil/Chemical tankers	Älvtank	Europe	BV
2019	Rossi A. Desgagnés	Oil/Chemical tankers	Groupe Desgagnés	America	BV
2019	Samsung 2236	Crude oil tankers	AET	Global	DNV GL
2019	Samnøy	Car/Passenger ferries	Torghatten	Norway	DNV GL
2019	Samsung 2237	Crude oil tankers	AET	Global	DNV GL
2019	Samsung 2241	Crude oil tankers	Teekay	Global	DNV GL
2019	Siem Confucius	Car carriers	Siem Car Carriers	Global	ABS
2019	Siem Melody	Offshore supply ships	Siem Offshore	Norway	DNV GL
2019	Siem Rhapsody	Offshore supply ships	Siem Offshore	Norway	DNV GL
2019	Sleipnir	General cargo ships	Heerema Offshore Services	Global	LR
2019	Spartacus	Other activities	DEME	Europe	BV
2019	TBN	General cargo ships	SeOil Agency/Gas Entec	Global	Unknown
2019	TBN	Oil/Chemical tankers	Sinanju Tankers	Asia	BV
2019	TBN	RoPax	Rederi AB Gotland	Europe	DNV GL
2019	TBN 1	Car carriers	Siem Car Carriers	Global	ABS
2019	TBN 1	Car/Passenger ferries	Royal Doeksen	Europe	LR
2019	TBN 1	Oil/Chemical tankers	Älvtank	Europe	BV
2019	TBN 1	Oil/Chemical tankers	Harley Marine Services Singapore	Asia	Unknown
2019	TBN 1	Other activities	German Transport Ministry	Europe	Unknown
2019	TBN 1	Tugs	Ningbo Zhoushan Port Co.	Asia	CSS
2019	TBN 2	Car/Passenger ferries	Clyde and Hebrides Ferry Service (CHFS)		Europe LR
2019	TBN 2	Car/Passenger ferries	Royal Doeksen	Europe	LR
2019	TBN 2	Container ships	Containerships	Europe	ABS
2019	TBN 2	Oil/Chemical tankers	Harley Marine Services Singapore	Asia	Unknown
2019	TBN 2	Other activities	German Transport Ministry	Europe	Unknown
2019	TBN 3	Container ships	Containerships	Europe	ABS
2019	TBN 4	Container ships	CMA CGM	Global	BV
2019	TBN 4	Container ships	Containerships	Europe	ABS
2019	TBN 5	Crude oil tankers	SCF	Europe	DNV GL
2019	TBN 6	Crude oil tankers	SCF	Europe	DNV GL
2019	Bencomo Express	Car/Passenger ferries	Fred. Olsen	Europe	DNV GL
2019	Napoles	RoPax	Baleària	Europe	RINA
2019	Sajir	Container ships	UASC	Global	DNV GL
2019	Samuel de Champlain	Other activities	Dragages-Ports	Europe	BV

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Year of delivery	Ship name	Ship type	Shipowner	Area of operation	Class
2019	Sicilia	RoPax	Baleària	Europe	RINA
2019	Spirit of Vancouver Island	Car/Passenger ferries	BC Ferries	America	ABS
2020	Brodosplit 476	Container ships	Brodosplit Shipping Company	Europe	DNV GL
2020	Atair	Other activities	German Transport Ministry	Europe	DNV GL
2020	George III	Container ships	Pasha Hawaii	America	ABS
2020	Janet Marie	Container ships	Pasha Hawaii	America	ABS
2020	Oddrun With	General cargo ships	Egil Ulvan Rederi	Norway	--
2020	Samsung 2242	Crude oil tankers	Teekay	Global	DNV GL
2020	Samsung 2256	Crude oil tankers	Teekay	Global	DNV GL
2020	Samsung 2257	Crude oil tankers	Teekay	Global	DNV GL
2020	Samsung 2286	Crude oil tankers	Teekay	Global	DNV GL
2020	TBN	Container ships	Brodosplit Shipping Company	Europe	DNV GL
2020	TBN 1	Container ships	Brodosplit Shipping Company	Europe	DNV GL
2020	TBN 1	Container ships	CMA CGM	Global	BV
2020	TBN 1	Container ships	Eastern Pacific Shipping	Global	LR
2020	TBN 1	Cruise ships	Carnival Corporation	Global	RINA
2020	TBN 1	Cruise ships	P&O Cruises	Global	RINA
2020	TBN 1	Fishing vessels	Nordlaks	Norway	DNV GL
2020	TBN 1	Oil/Chemical tankers	Furetank Rederi	Europe	--
2020	TBN 1	Oil/Chemical tankers	SCF	Global	RS
2020	TBN 10	Container ships	CMA CGM	Global	BV
2020	TBN 11	Container ships	CMA CGM	Global	BV
2020	TBN 12	Container ships	CMA CGM	Global	BV
2020	TBN 13	Container ships	CMA CGM	Global	BV
2020	TBN 14	Container ships	CMA CGM	Global	BV
2020	TBN 2	Container ships	Brodosplit Shipping Company	Europe	DNV GL
2020	TBN 2	Container ships	CMA CGM	Global	BV
2020	TBN 2	Container ships	Eastern Pacific Shipping	Global	LR
2020	TBN 2	Oil/Chemical tankers	SCF	Global	RS
2020	TBN 3	Container ships	CMA CGM	Global	BV
2020	TBN 3	Oil/Chemical tankers	SCF	Global	RS
2020	TBN 5	Container ships	Containerships	Europe	ABS
2020	TBN 6	Container ships	CMA CGM	Global	BV
2020	TBN 6	Container ships	Containerships	Europe	ABS
2020	TBN 7	Container ships	CMA CGM	Global	BV
2020	TBN 8	Container ships	CMA CGM	Global	BV
2020	TBN 9	Container ships	CMA CGM	Global	BV
2020	TBN High Speed Catamaran	Car/Passenger ferries	Baleària	Europe	BV
2020	Xiamen	RoPax	Viking Line	Europe	DNV GL
2020	Kong Harald	Cruise ships	Hurtigruten	Norway	DNV GL
2020	Nordkapp	Cruise ships	Hurtigruten	Norway	DNV GL
2020	Nordnorge	Cruise ships	Hurtigruten	Norway	DNV GL
2021	Costa	Cruise ships	Costa Crociere	Global	RINA
2021	Havila Polaris	Cruise ships	Havila Kyststruten	Norway	--
2021	Havila Pollux	Cruise ships	Havila Kyststruten	Norway	--
2021	Le Commandant Charcot	Cruise ships	Ponant	Global	BV
2021	Salamanca	RoPax	Brittany Ferries	Europe	DNV GL
2021	Samsung 2287	Crude oil tankers	Teekay	Global	DNV GL
2021	TBN 1	Bulk carriers	H-Line	Global	DNV GL/KR
2021	TBN 1	Car carriers	UECC	Global	DNV GL

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* = conversion projects

Year of delivery	Ship name	Ship type	Shipowner	Area of operation	Class
2021	TBN 1	Crude oil tankers	Rosneft	Europe	RS
2021	TBN 1	Cruise ships	Disney Cruise Lines	Global	LR
2021	TBN 1	Cruise ships	Havila Kyststruten	Norway	DNV GL
2021	TBN 1	Oil/Chemical tankers	Donsötank	Global	--
2021	TBN 1	Other activities	Van Oord	Global	BV
2021	TBN 1	RoPax	TT Line Co Pty Ltd	Oceania	LR
2021	TBN 1	Ro-Ro cargo ships	Wallenius SOL	Europe	LR
2021	TBN 2	Bulk carriers	H-Line	Global	DNV GL/KR
2021	TBN 2	Car carriers	UECC	Global	DNV GL
2021	TBN 2	Crude oil tankers	Rosneft	Europe	RS
2021	TBN 2	Cruise ships	Havila Kyststruten	Norway	DNV GL
2021	TBN 2	Fishing vessels	Nordlaks	Norway	--
2021	TBN 2	Oil/Chemical tankers	Donsötank	Global	--
2021	TBN 2	Other activities	Van Oord	Global	BV
2021	TBN 2	RoPax	TT Line Co Pty Ltd	Oceania	LR
2021	TBN 2	Ro-Ro cargo ships	Wallenius SOL	Europe	LR
2021	TBN 3	Container ships	Eastern Pacific Shipping	Global	LR
2021	TBN 3	Crude oil tankers	Rosneft	Europe	RS
2021	TBN 3	Ro-Ro cargo ships	Wallenius SOL	Europe	LR
2021	TBN 4	Container ships	Eastern Pacific Shipping	Global	DNV GL
2021	TBN 4	Crude oil tankers	Rosneft	Europe	RS
2021	TBN 4	Ro-Ro cargo ships	Wallenius SOL	Europe	LR
2021	TBN 5	Container ships	CMA CGM	Global	BV
2021	TBN 5	Crude oil tankers	Rosneft	Europe	RS
2021	TBN1	RoPax	Wasaline	Europe	--
2021	Midnight Sun	Ro-Ro cargo ships	TOTE Shipholdings	America	ABS
2021	Nordlys	Cruise ships	Hurtigruten	Norway	DNV GL
2021	North Star	Ro-Ro cargo ships	TOTE Shipholdings	America	ABS
2021	Polarlys	Cruise ships	Hurtigruten	Norway	DNV GL
2021	Richard With	Cruise ships	Hurtigruten	Norway	DNV GL
2022	Icon of the Seas	Cruise ships	RCCL	Global	DNV GL
2022	TBN	RoPax	Tallink	Europe	--
2022	TBN	RoPax	TT-Line GmbH	Europe	--
2022	TBN 1	Cruise ships	MSC Cruises	Global	BV
2022	TBN 1	RoPax	Polish Baltic Shipping Company	Europe	Unknown
2022	TBN 2	Cruise ships	Carnival Corporation	Global	RINA
2022	TBN 2	Cruise ships	Disney Cruise Lines	Global	LR
2022	TBN 2	Cruise ships	P&O Cruises	Global	RINA
2022	TBN 5	Container ships	Eastern Pacific Shipping	Global	DNV GL
2022	TBN 6	Container ships	Eastern Pacific Shipping	Global	DNV GL
2023		Cruise ships	Aida Cruises	Global	RINA
2023	TBN	RoPax	Brittany Ferries	Europe	--
2023	TBN 1	Cruise ships	Princess Cruises	Global	Unknown
2023	TBN 3	Cruise ships	Disney Cruise Lines	Global	LR
2023	TBN 3	Cruise ships	MSC Cruises	Global	BV
2024	TBN	Cruise ships	RCCL	Global	DNV GL
2024	TBN 1	Cruise ships	TUI Cruises	Global	Unknown
2024	TBN 2	Cruise ships	MSC Cruises	Global	BV
2025	TBN 2	Cruise ships	Princess Cruises	Global	Unknown
2026	TBN 2	Cruise ships	TUI Cruises	Global	Unknown

For more information please visit www.dnvgl.com

Data last updated: 30th April 2019

* = conversion projects