

LNG Fuelling

AN LNG JOURNAL PUBLICATION

11 January 2018

SGMF predicts 'tipping year' for LNG fuel

A surge in bunkering activity in 2018 is expected to mark the 'tipping year' for LNG as a fuel for ships, according to the Society Gas as a Marine Fuel (SGMF).

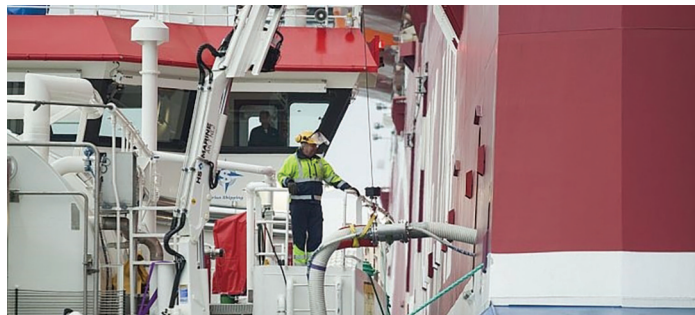
The industry body predicts that this year will see further growth in the number of projects undertaken and a continued rise in investment for the sector, bringing the fuel firmly into the mainstream.

"I have been asked many times recently: 'when will be the tipping point for gas-fuelled shipping?' and I believe that in the future when we look back there won't have been any specific moment we can point to. What I do think there will have been is an entire year - and that 'tipping year' is surely going to be 2018," Mark Bell, General Manager of SGMF, said.

Preparation for accelerated growth

Noting the groundwork that had already been laid in 2017, Bell highlighted the adoption of best practices and guidelines around safety and technical operation for LNG bunkering as key achievements for the sector.

"Applying the '80/20 rule', we believe the 20% that remains to be done is going to be the efficient development of SGMF guidelines as more and more operational ex-



Demand for LNG fuel is forecast to accelerate in 2018

perience is gained, with so many projects now being ordered and delivered," Bell added.

One key aspect of the SGMF's mission has been to bring major industry player onboard to the concept of LNG as a transport fuel and to this aim the society held three board meetings, one Technical Committee and three regional forums to foster community discussion in the last year.

"Our portal was completely overhauled in 2017 and now up and running very well," Bell said, adding that "it is hoped the emerging suppliers group and engine group will quickly develop the environmental positions for the Society."

As part of its strategy to ex-

pand industry engagement SGMF signed a memorandum of understanding last year with multi-sector industry coalition SEA\LNG to help crystalize working arrangements and ensure a coordinated approach to knowledge sharing in the LNG shipping industry.

"The conditions needed for an acceleration are in place. In particular, bunkering options are expanding on a global scale...Today, there are 117 vessels burning LNG, of which more than two-thirds are operating in Europe. A confirmed order book of 111 vessels will see that figure double," a spokesperson for SGMF said.

The SGMF is headquartered in London and includes 126 members worldwide with a combined LNG-fuelled fleet of 120 vessels and participation of 46 ports including major hubs such as Antwerp, Rotterdam and Singapore. "We have witnessed such significant increase in the number of projects and infrastructure recently and this is undoubtedly something we can all further look forward to as the greater maritime industry begins to embrace our message and realise the tremendous benefits of gas-fuelled shipping," Bell commented. ■



SGMF predicts a rise in LNG bunker activity in 2018

FUELLING NEWS AGENDA

ESTONIA



Eesti Gaas considers new LNG terminal

2

CONSORTIA

Societe Generale joins SEA\LNG

3

SINGAPORE

MPA plans S\$12m LNG bunkering investment

5

KOREA



Korea invests in LNG-fuelled future

6

LNG ORDERBOOK

LNG-fuelled confirmed newbuilds

7

LNG-fuelled ship fleet

8

LNG small scale fleet

10

Eesti Gaas considers new LNG terminal

Estonian utility firm Eesti Gaas has announced plans to invest in a new LNG terminal or bunker ship to meet demand in the Baltic.

The firm currently supplies LNG fuel by road to bunker from dock-side but is now considering various options to strengthen its bunkering portfolio.

"Currently we are transporting LNG with a semitrailer from Pskov, Poland and so on, but this is definitely not enough if there are more ships... Therefore we must consider if we should own a small terminal or build a bunkering ship and service ships in different ports with it. There are many possibilities," Ants Noot, CEO of Eesti Gaas, said.

Eesti Gaas estimates demand of around 500 million cubic meters of gas for Estonia, equivalent to around 30 million cubic meters of natural gas per ship.

"This means that just one

[extra] ship will increase our [demand] volumes substantially, but with tens of ships the volume doubles," he added.

Eesti builds on Tallink Megastar deal

Last year, Eesti Gaas partnered with shipping line Tallink to start providing liquefied natural gas for the LNG-fuelled fast ferry *Megastar* running on the Tallinn-Helsinki route.

"Eesti Gaas is Estonia's market expert in natural gas as it has been engaged in the import and supply of gas for decades. Today we are vigorously entering a new era, supplying Tallink Megastar with gas is our first big project in LNG marine transport," stated the head of Eesti Gaas, Ants Noot.



Eesti Gaas bunkering the *Megastar*

"I am glad we could offer the best price and conditions in competition with other serious providers," Noot said.

The *Megastar* features two stainless steel LNG tanks, located below deck, each of which have a

total volume of 600 cubic metres.

Eesti Gaas is 67% owned by investment company Infotart and includes subsidiaries AS EG Ehitus, which designs and builds gas networks, and distribution service provider AS Gaasivõrgud. ■

Port of Tallinn introduces LNG fuel discount

Authorities at the Port of Tallinn have applied a discount on tonnage fees for LNG-fuelled vessels calling at the port.

The discount equates to 4% on tonnage fees and is aimed at promoting greater adoption of the fuel in the Baltic Sea shipping sector.

"Similarly to other ports in the European Union and Norway, the Port of Tallinn has set a course toward environmentally differenti-

ated port fees, with the aim of reducing the amount of air pollution and marine pollution from ships' waste handling and gaseous emissions," Ellen Kaasi, head of quality and environmental management at the Port of Tallinn said.

The discount is one of several initiatives that the Port of Tallinn

supports to boost cleaner technologies in the shipping sector. These include investment in scrubbers to reduce sulphur compounds in emissions, and free processing for the waste generated by scrubbers without additional fees.

"While currently cruise ships that sort their waste receive a discount on the waste fee, [in 2018] we will introduce a discount on port infrastructure fees for all ships that use LNG as their primary fuel," Kaasi said.

ESI system under consideration

Authorities are monitoring the effect of these initiatives closely and if successful expect to extend the policy of environmental differentiation port fees.

One strategy under consideration is the implementation of the Environmental Ship Index (ESI) energy performance system, developed by the World Ports Climate Initiative (WPCI). The ESI system, which has been implemented successfully in many EU and Norwegian ports, is based on the emissions of nitrogen compounds (NOx), sulphur compounds (SOx),

"The implementation of differentiated port fees in various EU ports and a study regarding the impacts is part of the Green Cruise Port project cofinanced by the EU through the INTERREG BSR programme, which unites ports and cruise tourism sector companies in the Baltic Sea and North Sea countries," a Port of Tallinn spokesperson said. ■



i Port of Tallinn

LNG Fuelling
1st Floor, 30 Warner Street
London EC1R 5EX,
United Kingdom
www.lngjournal.com
Tel: +44 (0)20 7017 3404

Publisher
Stuart Fryer

Editor
Malcolm Ramsay
+44 (0)20 7017 3413
malcolm@lngjournal.com

Ad sales enquiries
Narges Jodeyri
+44 (0)207 017 3406
narges@lngjournal.com

Subscriptions
Elena Fuentes
Tel: +44 (0) 20 7253 2700
elena@lngjournal.com
Subscription included with LNG Journal

Production
Vivian Chee
Tel: +44 (0) 20 8995 5540
chee@btconnect.com

No part of this publication may be reproduced or stored in any form by any mechanical, electronic, photocopying, recording or any other means without the prior written consent of the publisher. Whilst the information and articles in LNG Shipping News are published in good faith and every effort is made to check accuracy, readers should verify facts and statements direct with official sources before acting on them as the publisher can accept no responsibility in this respect. Any opinions expressed in this publication should not be construed as those of the publisher."

NEWS NUDGES

ABS to class Q-LNG Articulated Tug Barge

Standards society ABS has been selected by manufacturer Q-LNG, LLC, to classify an Articulated Tug Barge (ATB) for LNG bunkering in North America.

Construction of the vessel is due to start in early 2018 at VT Halter Marine in Pascagoula, Mississippi.

"We chose ABS as our class partner for this project because of their extensive understanding of LNG as fuel and LNG bunkering applications. This project will expand the LNG supply chain and play a critical role in the advancement of LNG as a marine fuel throughout the region and North America," Chad Verret, President of Q-LNG, said.

The proposed LNG bunker barge will feature 4,000 cubic meters LNG capacity and will be owned and constructed by Q-LNG. It will be chartered by Shell and operated by New Orleans-based Harvey Gulf International Marine to supply LNG fuel to cruise vessels throughout the Southeast Coast of the US.

Lloyd's Register to assist HHI to build LNG-fuelled vessels

Maritime services firm Lloyd's Register is to assist engineering firm Hyundai Heavy Industry in the construction of new LNG-fuelled vessels.

Lloyd's Register will offer expertise in vessel design and build on an existing joint industry project agreement signed by HHI and LR along with Woodside, Anangel, GE.

"We are pleased to help the shipyard bring these types of innovative designs to the market through the joint development project with HHI. We believe that HHI's efforts can

Societe Generale joins SEA\LNG

French banking group Societe Generale has become the first financial institution to join multi-sector industry coalition SEA\LNG.

The firm will add "an essential financial perspective" to the coalition and is expected to help develop financing options to accelerate the uptake of LNG as a marine fuel.

"Societe Generale wants to play a key role in supporting the SEA\LNG coalition to realise its goal of making LNG a viable maritime fuel for 2020 and beyond. This strategic membership will help develop a long-term financial framework which we hope will contribute to, and supplement, the work of other industry leaders in the LNG shipping value chain," Paul Taylor, Global Head of Shipping Finance at Societe Generale, said.

LNG as marine fuel becoming 'global reality'

Societe Generale brings existing experience in shipping finance having pioneered involvement in the first transaction for the European Union's recently instituted Green Shipping Guarantee programme.

"The use of LNG as a marine fuel is gradually becoming a global reality. In line with our wider environmental commitment to promoting greener solutions, Societe Generale recognises the benefits of LNG in lowering local pollution and greenhouse gas emissions, when compared with traditional

offer the possibility that will help owners comply with emission regulations with a reliable and competitive solution," Jin-Tae Lee, Korea Chief Representative at LR, said.

HHI subsidiary Hyundai Mipo Dockyard (HMD) in South Korea recently completed a 50,000 DWT, LNG-fuelled bulk carrier for Japanese owners Ilshin Shipping, equipped with a high manganese steel LNG fuel tank, designed to withstand temperatures as low as -162°C.



Societe Generale has joined the SEA\LNG coalition

marine fuels," Taylor added.

€142.6 million lease financing to launch Honfleur

Societe Generale acted as the sole mandated lead arranger, lease investor, facility and security agent, hedge provider and lender for the lease financing of *Honfleur*, the first LNG-powered ferry to be commissioned by Brittany Ferries. The €142.6 million deal was backed by a funded guarantee from the European Investment Bank.

"Innovative financing is a core component to breaking down barriers to adoption and Societe Generale is at the forefront of developing frameworks to support

this evolution. We are therefore delighted to welcome them to our growing coalition and look forward to benefiting from their extensive knowledge and experience," Peter Keller, SEA\LNG chairman, said.

SEA\LNG includes ABS, Bureau Veritas, Carnival Corporation, Clean Marine Energy, DNV GL, Eagle LNG Partners, ENGIE, Gas Natural Fenosa, GE, GTT, JAX LNG, Keppel Gas Technology, Lloyd's Register, Marubeni, Mitsubishi, Mitsui., Novatek Gas & Power, NYK Line, Petronet LNG, Port of Rotterdam, Qatargas, Shell, Société Générale, Sumitomo Corporation, Total, TOTE, Toyota Tsusho, Uyeno Transtech, Yokohama-Kawasaki International Port Corporation (YKIP), and Wärtsilä. ■

Deltamarin, GTT publish LNG membrane tank study

Finnish ship designer Deltamarin together with Gaztransport & Technigaz (GTT) have published a study on the use of membrane containment systems onboard LNG-fuelled cargo and passenger vessels.

"From a net present value (NPV) point of view, the LNG membrane solution offers the highest value of all options over the ten-year period... when the

desired range, autonomy or ship size increase, other tank technologies may become more viable for LNG fuel storage," a Deltamarin spokesperson said.

The study's authors calculate that a membrane solution is "clearly the most feasible LNG fuel tank solution" and that only approximately 60% of LNG capacity provided by membrane technology could be accommodated in the same space, when using an optimised bi-lobe C-type tank solution. ■

Building the Energy Future through LNG



Chart LNG solutions are facilitating the use of natural gas as a safe, economical, clean-burning fuel alternative to diesel and other distillates for energy, transportation and industry.

www.ChartLNG.com
LNG@ChartIndustries.com



Innovation. Experience. Performance.®

MPA plans S\$12m LNG bunkering investment

The Maritime and Port Authority of Singapore (MPA) has announced plans to invest S\$12 million to boost LNG bunkering at the Port of Singapore.

Around half of the investment will be used to co-fund the building of new LNG bunker vessels as part of a programme to facilitate ship-to-ship LNG bunkering in the port.

The remaining half of the funding will be used to expand the MPA's existing programme to support the construction of LNG-fuelled vessels. This ambitious shipbuilding project, launched in 2015, is also supported by Keppel SMIT Towage, Maju Maritime, Harley Marine Asia and Sinanju.

Applications open for LBV fund

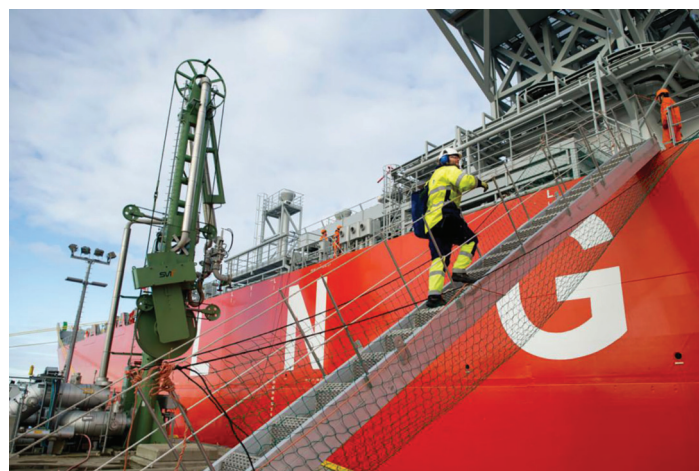
"Applications for the new fund for the building of LNG bunker vessels are now open and MPA is inviting interested companies to tap on it to co-fund up to S\$3 million per

LNG bunker vessel," the MPA said in a statement.

To apply, companies must be incorporated in Singapore, and the funded vessels must be registered with the Singapore Registry of Ships and licensed for bunkering activity in the Port of Singapore for a period of at least five years.

World's largest bunkering hub

Last year, the MPA announced several new measures under its Maritime Singapore Green Initiative (MSGI) to drive uptake of LNG as a fuel. This strategy is backed by the government which has long pushed to develop as a regional LNG hub with sovereign wealth fund Temasek investing heavily to develop infrastructure and attract



The MPA is investing in new LNG bunker vessels

foreign LNG specialists to the island.

"As the world's largest bunkering hub, MPA will support future demand by promoting the development of ship-to-ship LNG

bunkering in the Port of Singapore. This will provide the industry greater confidence in the availability of LNG supply across key shipping routes," Andrew Tan, Chief Executive of MPA, said. ■

Pavilion, PSA sign LNG bunker deal

Singaporean LNG supplier Pavilion Gas has been awarded a contract by PSA Marine for the supply of LNG bunker fuel from 2019.

The deal will see Pavilion provide LNG for two dual-fuel harbour tugs, which are due for delivery in 2019 and will be owned and operated by PSA Marine.

"Pavilion Gas is delighted to be awarded the contract by PSA Marine for the supply of LNG bunkers to two of its dual-fuel LNG har-

bour tugs," Seah Moon Ming, CEO of Pavilion Gas and sister firm Pavilion Energy, said.

"This is an important step forward for Pavilion Gas as LNG bunkering is a key driver for LNG demand growth. We look forward to playing a key role in developing the LNG bunkering ecosystem in

Singapore and the region," Seah Moon added.

Pavilion is one of the few companies licensed for both LNG bunkering and LNG import by the Maritime Port Authority of Singapore (MPA) and is currently working to strengthen LNG bunker supply and delivery models in partnership with international players. Pavilion Gas is a subsidiary of state-owned wealth fund Temasek.

LNG bunkering driver for LNG growth

Last year, Pavilion Gas signed a memorandum of understanding with bunker specialist Total Marine Fuels Global Solutions (TMFGS) to develop LNG solutions in Singapore and in May the firm successfully carried out the first LNG bunkering truck-to-ship in Singapore and Southeast Asia.

"Pavilion Energy views LNG bunkering as a future driver for LNG demand growth and wel-

comes this MOU with Total. Our role as an LNG bunker supplier is reinforced by the appointment of Pavilion Gas as an LNG importer in Singapore," Seah Moon said.

PSA signs Bangladesh contract

PSA Marine has further expanded its LNG operations recently with award of a 15-year contract from energy firm Summit Power International for the development of an LNG terminal in Bangladesh.

PSA Marine Bangladesh will provide berthing, mooring, pilot and personnel transfer services to LNG ships calling at Summit LNG FSRU terminal, with its three escort tugboats, one fast crew boat and one offshore supply vessel.

"Summit is the largest physical infrastructure company in Bangladesh... For our first project of LNG, we are pleased to bring on board PSA Marine," Muhammed Aziz Khan, Chairman of SPI said. ■



The MPA is investing in new LNG bunker vessels

Korea invests in LNG-fuelled future

Authorities in South Korea have backed investment in LNG-fuelled newbuild vessels as part of a strategy to restore the country's position in the global shipbuilding sector.

At the recent launch of the LNG carrier *Vldmimir Rusanov* President Moon Jae-in outlined a policy centred on restoring Korea's ailing shipbuilding sector through the construction of next-generation vessels.

"Korea can become a global shipbuilding leader once again. The vision of becoming a global shipbuilder is a national task that we cannot give up. Korea's ice-breaker LNG carrier, the first in the world, is proof of this belief," President Moon said.

Highlighting the key role that LNG-powered vessels would play in the next generation of shipbuilding orders, Moon promised renewed investment and research in the sector, setting a tough deadline for his administration to grow the shipbuilding industry within the first quarter of the year.

Proposed measures include increasing orders for public ships for ice breaker research or contra-band-control vessels, creating a large-scale offshore wind power park, and supporting R&D into environmentally friendly autonomous navigation technology.

**Vladimir Rusanov
equipped for minus 52 C**
Daewoo Shipbuilding and Marine



President Moon Jae-in receives a model of the LNG tanker 'Vladimir Rusanov' from Daewoo CEO Jung Sung-ep

Engineering launched the ground-breaking *Vladimir Rusanov* at its Okpo Shipyard in Geoje, Gyeongsangnam-do Province, at the start of this month, at a ceremony presided by Moon.

The icebreaker LNG carrier is named after the Russian polar explorer *Vldmimir Rusanov* and is equipped with specialized technology for polar regions and operating temperatures as low as -52°C. The tanker also features a

70 mm thick ultra-high-strength steel hull to protect the vessel from ice impacts.

"Onboard this icebreaker LNG carrier, I'm envisioning the future for the Korean shipbuilding industry, a ship that can sail the Arctic Ocean in extreme conditions by breaking through 2-meter-thick ice in temperatures as low as minus 52 C," Moon said.

Korea's shipbuilding sector has been decimated in recent years

following drastic cuts in orders from customers following the 2008 crisis. Nearly all the major players in the country have since been hit with billion-dollar losses or bankruptcy.

70% market share target for LNG newbuilds

Outside of the shipbuilding sector, authorities in South Korea have previously backed wide-ranging moves to support the uptake of LNG-fuelled transport and Moon's government has sought to create regulatory and financial incentives to drive newbuild LNG-fuelled orders.

By the year 2025, the government aims to increase South Korean shipyards' market share of newbuild LNG-powered vessels to 70 percent globally, from the current 60 percent.

To date, state-owned utility Korea Gas Corporation (Kogas) has been at the forefront of many plans to develop LNG infrastructure with multi-million-dollar investment planned to develop LNG bunkering at Tongyeong, in South Gyeongsang Province amongst other locations.



President Moon Jae-in at Okpo Shipyard in Geoje

WORLD LNG-FUELLED CONFIRMED NEWBUILDS

Year	Type of Vessel	Owner	Class
2017	Car/passenger ferry	Society of Quebec ferries	LR
2017	Car/passenger ferry	Society of Quebec ferries	LR
2017	Tug	Drydocks World	
2017	PSV	Siem Offshore	DNV GL
2017	Gas carrier	Evergas	BV
2017	PSV	Siem Offshore	DNV GL
2017*	Ro-Ro	TOTE Shipholdings	ABS
2017	Car/passenger ferry	BC Ferries	LR
2017	Gas carrier	Ocean Yield	DNV GL
2017	Gas carrier	Ocean Yield	DNV GL
2017	Gas carrier	Ocean Yield	DNV GL
2017	Gas carrier	Navigator Gas	ABS
2017	Dredger	DEME	BV
2017	Dredger	DEME	BV
2017*	Container ship	Wessels Reederei	BV
2017	Hopper Barge	Bremenports	DNV GL
2017	HSLC	Fred. Olsen	DNV GL
2017	PSV	Harvey Gulf Int.	ABS
2017	PSV	Harvey Gulf Int.	ABS
2017	Cable layer	DEME Tideway	DNV GL
2017	Gas carrier	Evergas	BV
2017	Gas carrier	Evergas	BV
2017	Tug	Østensjø Rederi	
2017	Tug	Østensjø Rederi	
2017	Tug	Østensjø Rederi	
2017*	Car/passenger ferry	BC ferries	ABS
2017	RoPax	Rederi AB Gotland	DNV GL
2017	Car/passenger ferry	Caronte & Tourist	RINA
2017	Oil/chemical tanker	Groupe Desgagnés	BV
2017	Oil/chemical tanker	Groupe Desgagnés	BV
2017	Oil/chemical tanker	Groupe Desgagnés	BV
2017	Oil/chemical tanker	Groupe Desgagnés	BV
2017	Car/passenger ferry	BC Ferries	LR
2017	Oil/chemical tanker	Terntank	BV
2017	Container ship	Crowley Maritime Corp.	DNV GL
2017	Container ship	Crowley Maritime Corp.	DNV GL
2017	RoPax	Tallink	BV
2017	Container ship	Brodosplit	DNV GL
2018	Container ship	Brodosplit	DNV GL
2018	Bulk ship	ESL Shipping	DNV GL
2018	Bulk ship	ESL Shipping	DNV GL
2018	Tug	Keppel Smit Towage	ABS
2018	Tug	Maju Maritime	ABS
2018*	Car/passenger ferry	BC ferries	ABS
2018	PSV	Harvey Gulf Int.	ABS
2018	Container ship	Brodosplit	DNV GL
2018	Container ship	Brodosplit	DNV GL
2018	Car/passenger ferry	Royal Doeksen	LR
2018	Car/passenger ferry	Royal Doeksen	LR
2018	Car/passenger ferry	CHFS	LR
2018	Car/passenger ferry	CHFS	LR
2018*	Ro-Ro	TOTE Shipholdings	ABS
2018	RoPax	Rederi AB Gotland	DNV GL
2018	General cargo ship	Nordnorsk Shipping	DNV GL
2018	Container ship	Containerships	ABS

Year	Type of Vessel	Owner	Class
2018	Container ship	Containerships	ABS
2018	Container ship	GNS Shipping	ABS
2018	Container ship	GNS Shipping	ABS
2018	Container ship	GNS Shipping	ABS
2018	Container ship	GNS Shipping	ABS
2018	Heavy lift vessel	Heerema Offshore	LR
2018	Oil/chemical tanker	Furetank Rederi	BV
2018	Oil/chemical tanker	Furetank Rederi	BV
2018	Oil/chemical tanker	Furetank Rederi	BV
2018	Dredger	DEME	BV
2018	Bulk ship	POSCO	KR
2018	Dredger	van der Kamp	DNV GL
2018	Car/passenger ferry	Torghatten	
2018	Car/passenger ferry	Torghatten	
2018	Car/passenger ferry	Torghatten	
2018	Car/passenger ferry	Torghatten	
2019	Car/passenger ferry	Torghatten	
2019	Cruise ship	Carnival Corporation	RINA
2019	Cruise ship	Carnival Corporation	RINA
2019	Oil/chemical tanker	Älvtank	BV
2019	Oil/chemical tanker	Älvtank	BV
2019	Oil/chemical tanker	Thun Tankers	BV
2019	RoPax	Baleària	BV
2019	Car carrier	Siem Car Carriers	
2019	Car carrier	Siem Car Carriers	
2019	Emergency response ship	German Transport Ministry	
2019	Emergency response ship	German Transport Ministry	
2019	RoPax	Brittany Ferries	
2019	RoPax	Baleària	
2019	RoPax	Baleària	
2019	Oil/chemical tanker	Rosneft	
2020	Oil/chemical tanker	Rosneft	
2020	Oil/chemical tanker	Rosneft	
2020	Oil/chemical tanker	Rosneft	
2020	Research ship	German Transport Ministry	
2020	RoPax	Viking Line	
2020	Cruise ship	Carnival Corporation	RINA
2020	Cruise ship	Carnival Corporation	
2021	Cruise ship	Carnival Corporation	
2021	Cruise ship	Carnival Corporation	
2022	Cruise ship	Carnival Corporation	RINA
2022	Cruise ship	MSC Cruises	
2022	Cruise ship	RCCL	
2024	Cruise ship	MSC Cruises	
2024	Cruise ship	RCCL	

Excluding LNG carriers and inland waterway vessels. For more information please visit www.dnvgl.com

Data last updated : 15 February 2017

* = conversion projects

LNG-FUELLED SHIPS IN OPERATION WORLDWIDE

Year	Type of Vessel	Owner	Class
2000	Car/passenger ferry	Fjord1	DNV GL
2003	PSV	Simon Møkster	DNV GL
2003	PSV	Eidesvik	DNV GL
2006	Car/passenger ferry	Fjord1	DNV GL
2007	Car/passenger ferry	Fjord1	DNV GL
2007	Car/passenger ferry	Fjord1	DNV GL
2007	Car/passenger ferry	Fjord1	DNV GL
2007	Car/passenger ferry	Fjord1	DNV GL
2008	PSV	Eidesvik Shipping	DNV GL
2009	PSV	Eidesvik Shipping	DNV GL
2009	Car/passenger ferry	Tide Sjø	DNV GL
2009	Car/passenger ferry	Tide Sjø	DNV GL
2009	Car/passenger ferry	Tide Sjø	DNV GL
2009	Patrol vessel	Remøy Management	DNV GL
2009	Car/passenger ferry	Fjord1	DNV GL
2010	Patrol vessel	Remøy Management	DNV GL
2010	Car/passenger ferry	Fjord1	DNV GL
2010	Patrol vessel	Remøy Management	DNV GL
2010	Car/passenger ferry	Fjord1	DNV GL
2010	Car/passenger ferry	Fjord1	DNV GL
2010	Car/passenger ferry	Fosen Namsos Sjø	DNV GL
2011	PSV	DOF	DNV GL
2011*	Oil/chemical tanker	Tarbit Shipping	DNV GL
2011	Car/passenger ferry	Fjord1	DNV GL
2011	PSV	Solstad Rederi	DNV GL
2012*	Car/passenger ferry	Fjord1	DNV GL
2012	PSV	Eidesvik	DNV GL
2012	PSV	Olympic Shipping	DNV GL
2012	PSV	Island Offshore	DNV GL
2012	General Cargo	Nordnorsk Shipping	DNV GL
2012	PSV	Eidesvik Shipping	DNV GL
2012	PSV	Island Offshore	DNV GL
2012	Car/passenger ferry	Torghatten Nord	DNV GL
2012	Car/passenger ferry	Torghatten Nord	DNV GL
2012	Car/passenger ferry	Torghatten Nord	DNV GL
2013	PSV	REM	DNV GL
2013	RoPax	Viking Line	LR
2013	Car/passenger ferry	Torghatten Nord	DNV GL
2013	Tug	Incheon Port Authority	KR
2013	General Cargo	Eidsvaag	DNV GL
2013	RoPax	Fjordline	DNV GL
2013	High speed RoPax	Buquebus	DNV GL
2013	Tug	CNOOC	CCS
2013	Tug	CNOOC	CCS
2013	Car/passenger ferry	Norled	DNV GL
2014	Car/passenger ferry	Norled	DNV GL
2014	Tug	Buksér & Berging	DNV GL
2014	RoPax	Fjordline	DNV GL
2014	Patrol vessel	Finish Border Guard	DNV GL
2014	Tug	Buksér & Berging	DNV GL
2014	Gas carrier	Anthony Veder	BV
2014	Gas carrier	Anthony Veder	BV
2014	PSV	Remøy Shipping	DNV GL
2014	General Cargo	Egil Ulvan Rederi	DNV GL
2014	General Cargo	Egil Ulvan Rederi	DNV GL
2014	PSV	Siem Offshore	DNV GL
2015	PSV	Harvey Gulf Int.	ABS
2015	Ro-Ro	Norlines	DNV GL
2015	Car/passenger ferry	Samsøe municipality	DNV GL
2015	PSV	Simon Møkster Shipping	DNV GL
2015	PSV	Siem Offshore	DNV GL
2015	Ro-Ro	Norlines	DNV GL
2015*	Oil/chemical tanker	Bergen Tankers	LR
2015	Car/passenger ferry	Society of Quebec ferries	LR

For more information please visit www.dnvgl.com

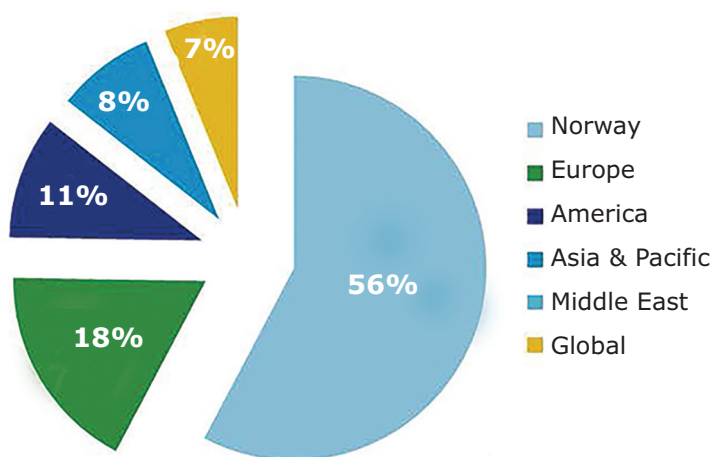
Data last updated: 15 February 2017

* = conversion projects

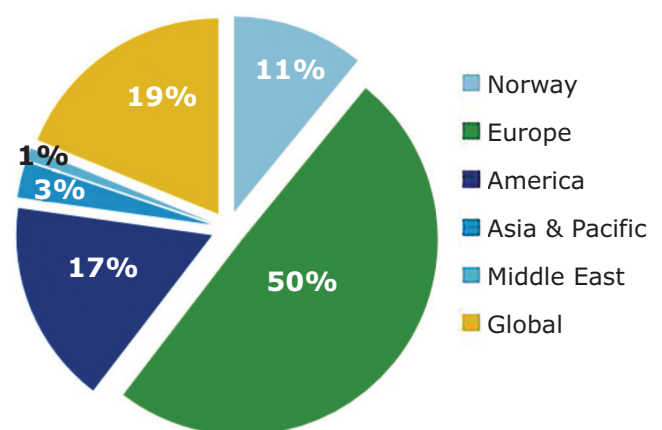
Year	Type of Vessel	Owner	Class
2015	Gas carrier	Evergas	BV
2015	Gas carrier	Evergas	BV
2015	Tug	CNOOC	CCS
2015*	Car/passenger ferry	AG Ems	DNV GL
2015	Tug	NYK	NK
2015	Gas carrier	Chemgas Shipping	BV
2015	Gas carrier	Evergas	BV
2015	PSV	Harvey Gulf Int.	ABS
2015	Container ship	TOTE Shipholdings	ABS
2015	Car/passenger ferry	AG EMS	DNV GL
2015	Bulk ship	Erik Thun	LR
2016	Container ship	TOTE Shipholdings	ABS
2016	Gas carrier	Evergas	BV
2016	PSV	Harvey Gulf Int.	ABS
2016	Bulk ship	Erik Thun	LR
2016	Oil/chemical tanker	Terntank	BV
2016	Gas carrier	Navigator Gas	ABS
2016*	Oil/chemical tanker	Furetank Rederi	BV
2016	Icebreaker	Arctica Shipping	LR
2016	Car/passenger ferry	Boreal Transport Nord	DNV GL
2016	Car/passenger ferry	Boreal Transport Nord	DNV GL
2016	Tug	CNOOC	CCS
2016	Gas carrier	Chemgas Shipping	BV
2016	Car carrier	UECC	LR
2016	Oil/chemical tanker	Terntank	BV
2016	Oil/chemical tanker	Terntank	BV
2016	Car/passenger ferry	BC Ferries	LR
2016	Gas carrier	Evergas	BV
2016	PSV	Siem Offshore	DNV GL
2016	Car/passenger ferry	Seaspan Ferries Corp.	BV
2016	Gas carrier	Navigator Gas	ABS
2016	Ro-Ro	Searoad Holdings	DNV GL
2016	Car carrier	UECC	LR
2017	Gas carrier	Navigator Gas	ABS
2017	Car/passenger ferry	Seaspan Ferries Corp.	BV
2017*	RoPax	Baleària	BV

AREA OF OPERATION OF LNG-FUELLED SHIPS

Operating area
ships in operation



Operating area
confirmed orderbook



Updated 15 February 2017
Excluding LNG carriers and inland waterway vessels

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 / Lucia Ambition	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	Tripura (ex Surya Satsuma)	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 Bahrain Vision	12,000	LNG/LPG/Ethylene	Worldwide	No	Norgas Carriers
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	Norgas Unikum	12,000	LNG/LPG/Ethylene	Worldwide	No	Norgas Carriers
2012	Coral Energy	15,600	LNG	Northwest Europe/Baltics	Yes	Anthony Veder
2013	Coral Anthelia	6,500	LNG/Ethylene			Anthony Veder
2013	JX Energy TBN	2,500	LNG	Japan	Yes	JX Energy
2013	Kakuyu Maru	2,500	LNG	Japan	Yes	Tsurumi Sunmarine
2014	LNG-Oil combi**	2,000	LNG	Germany	Yes	Veka
2014	Short Sea LNG Tanker **	4,000	LNG	Germany	Yes	Veka
2015	10 small carriers TBN**	5,000	LNG			Bimantara Group
2015	Jahre TBN**	6,200	LNG	Norway	Yes	Donsotank/Jahre Marine
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	LNG Barge TBN	3,000	LNG	US Coast	Yes	LNG America
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 Inland bunker**	800	LNG	Germany	Yes	Veka
2015	Norgas TBN**	17,000	LNG/LPG/Ethylene	Worldwide		Norgas Carriers
2015	Norgas TBN**	17,000	LNG/LPG/Ethylene	Worldwide		Norgas Carriers
2015	PetroChina TBN	30,000	LNG	China		PetroChina
2015	TBN	14,000	LNG	China	Yes	Zhejiang Huaxiang
2015	TBN 1	27,500	LNG	China?		Danyang?
2015	TBN 2	27,500	LNG	China?		Danyang?
2015	TBN 3	27,500	LNG	China?		Danyang?
2016	Clean Jacksonville	2,200	LNG	US Coast	Yes	CME
2016	Dalian TBN	28,000	LNG	China	Yes	Dalian Inteh Group
2016	Hai Yang Shi You 301	30,000	LNG	Bali FSU	Yes	CETS (CNOOC)
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	LNG Prime	2,250	LNG	Northwest Europe	Yes	Veka Deen LNG
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 = 16th November 2017

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	Cardissa	6,500	LNG	Northwest Europe	Yes	Shell
2017	Yuan He 1	30,000	LNG	China	Yes	CSR
2017	ENGIE Zeebrugge	5,000	LNG	Northwest Europe	Yes	NYK
2017	CME TBN†	2,200	LNG	US Coast	Yes	CME
2017	CME TBN†	2,200	LNG	US Coast	Yes	CME
2017	Coral EnergICE	18,000	LNG	Northwest Europe/Baltics	Yes	Anthony Veder
2017	Coralius	5,800	LNG	Northwest Europe/Baltics	Yes, for Skangas	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	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	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	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	Shell Bunker Barge TBN 4	3,000	LNG	Northwest Europe	Yes	Shell
2018	Bernhard Schulte TBN	7,500	LNG	Baltic	Yes	Bernhard Schulte
2018	CME TBN†	2,200	LNG	US Coast	Yes	CME
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
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	Stolt TBN (option)	7,500	LNG		Yes	Stolt-Nielsen Gas
2020	Stolt TBN (option)	7,500	LNG		Yes	Stolt-Nielsen Gas
2020	Shell Bunker Barge	4,000	LNG	US Coast	Yes	Q-LNG Transport / Harvey Gulf
2021	Stolt TBN (option)	7,500	LNG		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 = 16th November 2017

Small-LNG.com

LNG Journal & Gas to Power Journal Subscription Package

The journals' comprehensive coverage is dedicated to the entire gas-value-chain. In addition to our LNG Journal & Gas to Power Journal Daily newsletters, each platform provides exclusive, accurate and up-to-date news and analysis divided in the following sector-focused publications:

- ➔ LNG Journal - Monthly issues
- ➔ Gas to Power Journal - Daily e-newsletter + PDF
- ➔ LNG Unlimited - Weekly magazine + PDF
- ➔ LNG Shipping News - Fortnightly e-newspaper + PDF
- ➔ LNG Fuelling - Fortnightly e-newspaper + PDF
- ➔ LNG North America - Monthly e-newspaper + PDF

United Kingdom **GBP 750**
Europe and Africa **EUR 925**
Asia and Americas **USD 1150**

Multiuser options under request **new subscribers only*



For further information on subscribing please contact us at elena@lngjournal.com or + 44 20 7017 3416