

LNG Fuelling

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Total acquires PitPoint to drive LNG fuelling growth

Energy major Total is to acquire Dutch vehicle fuelling specialist PitPoint, as part of a strategy to “significantly increase” its presence in the natural gas vehicle fuel sector.

The deal will see Total add PitPoint’s existing LNG fuelling operations in Zwolle in the Netherlands and a network of around 100 natural gas fuelling stations to its portfolio across Europe.

“The acquisition will enable the Group to... implement its plans to establish a network of 350 natural gas vehicle fueling stations in Europe by 2022, making Total the leader in natural gas vehicle fuel in Europe,” a spokesperson for Total said.

The group expects to focus initially on growth in the trucking and professional transport sector.

PitPoint plans eight more LNG stations

PitPoint currently operates just one LNG station in Zwolle but expects to complete eight more stations over the next two years. The Zwolle station provides refuelling for both 9 and 18 bar types of LNG trucks with high fill rate.

“Following the acquisition of Lampiris in 2016, this acquisition is part of Total’s strategy to ex-



pand its low-carbon businesses... There is strong development potential for natural gas vehicle fuel in the transport sector. Our aim is to combine PitPoint’s technological and commercial expertise acquired over the last ten years with Total’s strong retail marketing network and client portfolio,” said Patrick Pouyanné, chairman and CEO of Total.

PitPoint is currently Europe’s third-largest provider of natural gas vehicle fuel and alongside LNG fuelling the firm’s operations include biogas, hydrogen and electric vehicle charging for both road and maritime transport.

Total expands gas fuelling in France

Last month Total inaugurated its first natural gas fuelling station in France, in Nantes. The firm expects to open 15 stations in total this year, followed by an additional 10 a year going forward.

“As part of the energy transition, natural gas could become the fuel of the future for road transportation. Total is a global gas player present across the value chain; we want to promote its development, especially for the truckers and transporters we serve. To support this aim, we are expanding our network of fueling stations retailing natural gas fuel,” Momar Nguer, President of Total Marketing & Services, said.

Total state that it intends to “fast-track” the development of its natural gas vehicle network through leveraging its existing network of more than 9,000 petrol stations with priority given to “accelerating growth in markets where Total is already active” in natural gas vehicle fuel, notably Germany, the Benelux countries and France.



Total plans to open several new LNG fuelling stations in Europe

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Chart on course for Klaipeda LNG Hub

Cryogenic storage specialist Chart Industries has started final installation operations for the first phase of the Klaipeda LNG distribution hub in Lithuania and now expects the hub to be operational “by the end of the summer”.

A total of five giant cryogenic storage tanks are set to be installed at the site with three already onsite and the remaining two en route from Chart's facility in Decin, Czech Republic.

“The overall plant design incorporates future expansion, capable of doubling the storage capacity and Chart is further supporting the customer in follow up projects to develop additional small-scale LNG solutions for power generation, vehicle fuelling and other end-use applications,” a spokesperson for Chart Industries said.

Nordic backs LNG future

Earlier this month, the Klaipėdos Nafta, Lithuania's state-run LNG terminal operator and the developer of the site signed a €20 million credit agreement with the

Nordic Investment Bank granting capital to finance the construction of the LNG reloading station and the first stage of Klaipėda oil terminal expansion projects.

The LNG station will deliver small-scale LNG infrastructure for the Baltic and north-eastern Poland region and provide refuelling for both marine vessel and land vehicles.

The storage tanks installed by Chart will receive gas from the floating storage and regasification unit (FSRU) Independence and connect with two truck loading bays, marine bunkering jetty and a land-based regasification plant.

Blue LNG to supply 7,500m³ supply vessel

Joint venture partnership, Blue LNG, will lease a bunker supply

vessel from Germany's Schulte Group for the hub. The vessel is set to have capacity of 7,500 cubic meters and is on order from Hyundai Mipo Dockyard in South Korea.

Delivered next summer, the bunker-supply ship will be positioned at the Port of Klaipeda in Lithuania, delivering LNG as marine fuel to ships serving Baltic and Nordic ports. The ship is also the largest LNG bunker-supply ship booked to date.

“Our planned commissioning of

the world's largest LNG-refuelling ship in the coming year demonstrates that we are on course for growth,” Mahinde Abeynaïke, managing director at Nauticor, said. ■



Cryogenic tanks en route to Klaipeda

Molgas completes LNG bunkering first at port of Santander

Spanish energy provider Molgas Energía has bunkered the first LNG at the port of Santander in northern Spain.

The firm bunkered the LNG-fuelled cement carrier *Ireland* in a tank-to-ship operation. In total 40 metric tonnes of LNG was

transferred to the ship.

“The bunkering follows a similar operation involving the cement carrier carried out at the neigh-

boring Port of Bilbao in March,” Juan Menchero, chief operating officer of Molgas Energía, said.

Molgas Energy is one of the oldest dedicated LNG fuelling specialists in Spain and is part of the Transmol group of companies which also includes Transmol Logística and Transmol Criogenia.

Thun Tankers orders LNG-fuelled tankers

Dutch shipbuilder Scheepswerf Ferus Smit which built the *Ireland* recently received an order for four further LNG-ready vessels from shipping firm Thun Tankers.

“We always strive to meet our customers' various demands with

sustainable solutions. With this order we intend to further extend that offer by building a series of identical sister ships where some use LNG as a fuel and others don't,” Johan Källsson, deputy managing director at Thun, said.

Fleet replacement to add greater flexibility

The newbuild vessels are expected to gradually replace some of the group's existing tankers adding greater flexibility to its customers.

The vessels will be 7,999 deadweight-tonnes and are scheduled to be delivered in stages from the fourth quarter of 2018 onwards. ■



Molgas completed the first LNG bunkering at the port of Santander

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Caterpillar Marine unveils Kiel LNG test bed

Equipment manufacturer Caterpillar Marine has unveiled a new LNG test bed for gas-fuelled engines at its facility in Kiel, Germany.

The new apparatus is housed in a 40-foot container frame and includes an LNG preparation unit with LNG tank and gas preparation unit. The firm will use the system to test new LNG solutions and perfect its MaK branded dual fuel engine design.

The MaK engines are capable of running on either gas or marine diesel oil and Caterpillar hopes the new Kiel location will improve the understanding of the technology and enhance the service it provides to clients adopting LNG.

“Caterpillar’s LNG test bed in Kiel is a milestone in LNG development. While LNG is a promising fuel, it does offer unique challenges. LNG has to be kept at extremely low temperatures to prevent it from vaporizing, and this requires additional gas handling components not found in

other power systems,” Georg Gillert, engineering supervisor for Caterpillar Marine, said.

With the launch of the test bed, Caterpillar has outlined a number of focus areas for future research, including: testing and improving LNG components, optimizing and developing real-world LNG plants, familiarization of personnel with LNG capabilities and demonstration of LNG benefits to clients.

“New engine and gas handling architecture is needed to take full advantage of LNG’s emissions benefits. Customized monitoring and control processes will also be needed to optimize fuel/air composition and safe engine operation,” the company stated.

Testing to drive further optimization

Caterpillar Marine is a German



The LNG test bed in Kiel, Germany

subsidiary of global conglomerate Caterpillar and provides power solutions in the medium- and high-speed segments with outputs from 93 to 16,800 kilowatts in main propulsion and 10 to 16,100 kilowatts in marine generator sets as well as a comprehensive portfolio of propulsion solutions.

“Knowledge is power, and it’s no different with LNG power. The Kiel test bed will arm Caterpillar

sales personnel and dealers with valuable information regarding the technology. This information will be passed on to clients to help them make informed decisions regarding their vessels,” a spokesperson for Caterpillar Marine said.

The LNG tank and gas preparation apparatus for the test bed has been developed and provided by maritime engineering consultancy Marine Service, Hamburg. ■



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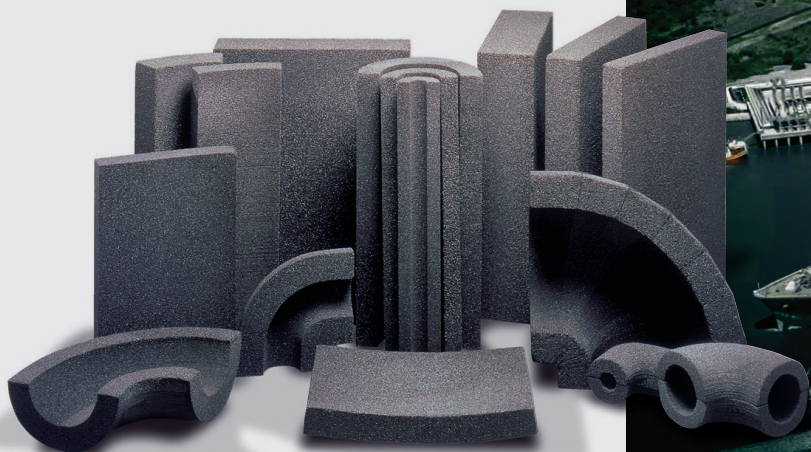
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Pasha Hawaii selects Keppel AmFELS for LNG containerships

Shipping firm Pasha Hawaii has selected Keppel AmFELS for the construction of two new LNG-fuelled containerships and optioned a further two additional vessels.

The vessels will each carry 2,525 twenty-foot-equivalent containers, including a fully laden capacity of 500 45-foot containers, 400 refrigerated containers, and 300 40-foot dry containers. Both ships will be U.S. Jones Act and will have a sailing speed of 23.0 knots.

“Keppel O&M’s technical expertise in LNG propulsion and commitment to customer service were two very important factors in our selection decision,” George

Pasha IV, CEO of Pasha Hawaii, said. “From the start, they went above and beyond and worked closely with us in customizing a vessel design that matched our requirements. Their experience in LNG vessel conversions will also prove to be very valuable as we build LNG dual-fuelled vessels for the Hawaii trade.”

Keppel AmFELS is located in Brownsville, Texas and is a subsidiary of Singaporean conglomer-

ate Keppel. The first vessel is scheduled for delivery in the first quarter of 2020 and the second vessel will be delivered in the third quarter the same year.

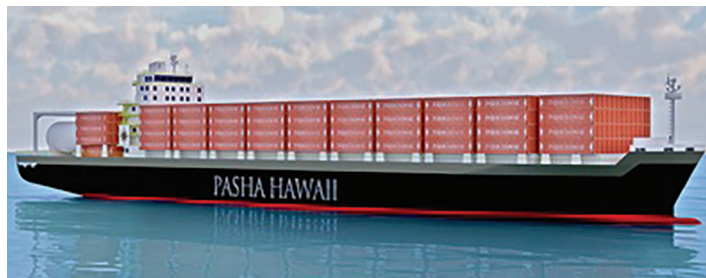
LNG-powered from day one

Unlike many LNG-fuelled vessels currently under order the containerships are expected to enter operation fully powered by LNG from “day one in service”. Pasha expects this will dramatically reduce environmental impact and alongside low-emission fuel has added energy saving features to the design including optimized hull form, underwater propulsion system and a high-efficiency rudder and propeller.

“As with the construction of our *Jean Anne* and *Marjorie C*, we

look forward to working with an extremely qualified shipyard, based in the United States. Pasha Hawaii is a firm believer in the Jones Act, and is proud to support our shipyards and the highly skilled workers who make valuable contributions to this important industry on a daily basis,” Pasha IV commented.

Pasha Hawaii is headquartered in Honolulu and provides pure car/truck carrier (PCTC) services, container shipment and logistics services between Hawaii and the U.S. mainland. The use of LNG in Hawaii has faced some opposition from island campaigners with Hawaii Governor David Igehas repeatedly opposing development of LNG infrastructure on the islands and instead backing renewable deployment. ■



Artist's rendition of the new LNG-fuelled vessel

DEME orders LNG-fuelled offshore vessel

Marine engineering group DEME has placed an order for the world’s first LNG-fuelled offshore installation vessel, *Orion*.

The vessel will be built by Chinese shipbuilder COSCO and is set to feature “exceptionally high transport and load capacity” along with “impressive lifting heights” and green technology.

“The vessel can take the heaviest monopiles, jackets, wind turbine components and structures in a single shipment. With this unmatched combination of high load and lifting capacity, *Orion* can transport and install the next generation of giant multi-megawatt wind turbines,” a spokesperson for DEME said.

The *Orion* will be deployed by DEME’s subsidiary GeoSea and will be used for offshore wind farm construction projects, oil and gas industry services and decommissioning of offshore installations. The ship is scheduled for delivery in 2019.

The vessel will be 217 metres in length and will have a total installed capacity of 44,180 kilo-

watts. It will be equipped with an onboard crane capable of lifting up to 3,000 tonnes at more than 50 metre reach and up to 170 metres height.

“With *Orion* we will be uniquely positioned to meet the future requirements of our customers and the trend towards larger capacity turbines and bigger wind farm projects... With DP3 technology the offshore installation vessel can continue operations under the most challenging conditions,” Luc Vandenbulcke, managing director GeoSea, said.

Wärtsilä to supply 46DF and 20DF engines

The engines for the *Orion* will be dual-fuel engines supplied by Finnish manufacturer Wärtsilä. These include four 9-cylinder Wärtsilä 46DF dual-fuel electric propulsion engines, and two 6-cylinder Wärtsilä 20DF dual-fuel engines.



Artist's rendition of the *Orion*

“We are pleased to have been involved in this newbuild project from the conceptual design stage, since this enables our input on providing the most fuel efficient solution. We are also delighted that the Wärtsilä 46DF engine has been selected, as the dual-fuel version of this well proven and popular engine has only recently been introduced,” Arthur

Boogaard, General Manager, Business Development Special Vessels at Wärtsilä, said.

Wärtsilä will also supply two custom made retractable thrusters, four underwater demountable thrusters, the Wärtsilä LNGPac storage and supply system, as well as commissioning, site supervision and extended project management services. ■

Japan Marine, Aluship to collaborate on SPB tank technology

Shipbuilder Aluship Technology has signed an agreement with marine engineering firm Japan Marine United to manufacture self-contained square type IMO type B (SPB) LNG tank systems.

The SPB systems offers advantages as an LNG-bunker tank in large gas-powered ships, in floating LNG production and regasification vessels and for LNG cargo containment systems and will be marketed as a space-saving alternative to the cheaper Moss spherical and GazTransport & Technigaz (GTT) membrane tank systems.

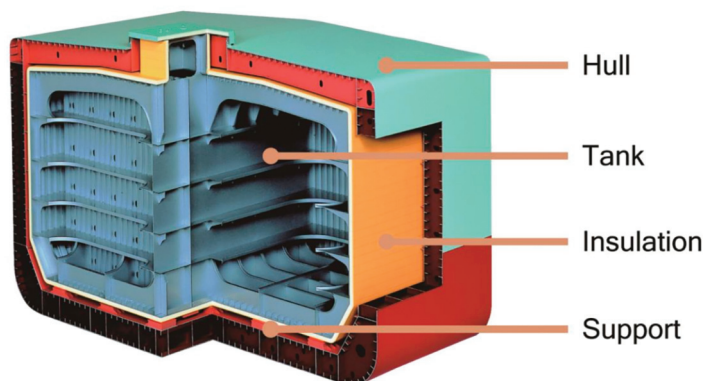
Partnership targets European growth

The deal will see Aluship fabricate the SPB units at its facilities in Gdansk, Poland and market the proprietary technology for European customers.

"Having a fabricator in Europe where use of LNG fuel in shipping and LNG supply infrastructure have been well advanced, JMU is now able to supply promptly European customer with SPB System, and to have more sales opportunity in the area through the fabricator," Japan Marine said in a statement.

Partial load benefits key for Tokyo Gas carriers

Japan Marine plans to install the SPB systems in four newbuild LNG carriers for delivery to Tokyo Gas.



The SPB tank system

The four tri-fuel, diesel-electric (TFDE) LNG carriers each have capacity of 165,000 cubic metres and will be used to carry cargoes from Cove Point LNG on the U.S. east coast.

"The SPB system is a highly reliable technology with features such as a high degree of freedom of tank shape, no restriction on volume, "no sloshing"...We will continue to expand our manufacturing base for the SPB system and strive to supply optimum tank systems," a spokesperson for Japan Marine said, adding that the partnership would look to market the systems to "customers outside Europe, when

it has enough competitiveness".

SPB tanks are formed of a stiffened plate structure of aluminum alloy or 9% Ni steel and covered by PUF insulation. This structure can then be supported by tank supports and chocks made of specially reinforced plywood.

The tank is subdivided by a centerline liquid tight bulkhead and a swash bulkhead into four compartments and, as a result, the natural frequency of the liquid inside tank is far from that of ship's motion, eliminating resonance and enabling partial loaded voyage and quick dispatch from the berth in emergency.

NEWS NUDGES

Cochin Eyes role as LNG bunker hub

The port of Cochin in India is reportedly set to develop its role as a global bunker destination, according to discussion held at the International Bunkering Conference.

Authorities at the Cochin Port Trust and the Indian Customs, Central Excise and Service Tax department discussed challenges in "bunker sales and bunkering business" in India and hailed the Cochin Port model for its promotion of LNG bunkering trade.

The Port Trust also called for further facilitation of floating bunker storage. Located on the Laccadive Sea, Cochin Port is a major Indian Ocean port and one of the largest ports in India.

Engie, AES sign LNG joint venture

Fuel specialists ENGIE AND AES have entered a joint venture to market and sell LNG to third parties in Central America.

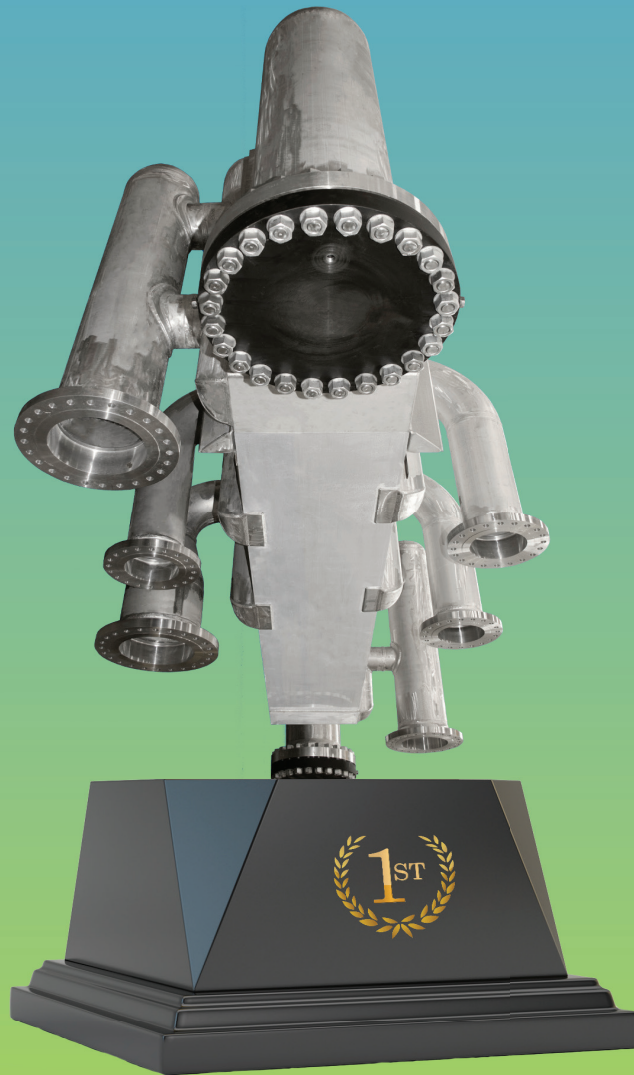
The venture operate via the Costa Norte LNG terminal in Colón, Panama. The terminal is currently under construction and is jointly owned by AES and Inversiones Bahía. It will have capacity of approximately 1.5 million tonnes of LNG per annum.

"This joint venture further strengthens the joint marketing agreement signed by Engie and AES late last year, whereby both groups agreed to jointly market LNG in the Caribbean, from AES' Andres regasification facility in the Dominican Republic," Engie said in a statement.



Aluship will bring its expertise in aluminium shipbuilding to the project

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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

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 = 26 April 2017

Built	Name	CBM	Cargo Type	Trading area	Trading in LNG?	Ship Owner / Operator
2016	Navigator Aurora	35,000	Ethane/Ethylene	Markus Hood - Stenungsund	Ethane, for Borealis	Navigator
2016	Ocean Yield TBN	36,000	Ethane/Ethylene	US - Teeside	Ethane, for Sabic	Gaschem Services
2016	Ocean Yield TBN	36,000	Ethane/Ethylene	US - Teeside	Ethane, for Sabic	Gaschem Services
2016	Ocean Yield TBN	36,000	Ethane/Ethylene	US - Teeside	Ethane, for Sabic	Gaschem Services
2016	Shell Bunker Barge TBN 1	6,500	LNG	Northwest Europe	Yes	Shell
2016	Shell Bunker Barge TBN 2	6,500	LNG	Northwest Europe	Yes	Shell
2016	Shell Bunker Barge TBN 3	6,500	LNG	Northwest Europe	Yes	Shell
2016	Shell Bunker Barge TBN 4	3,000	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	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

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 = 26 April 2017

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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

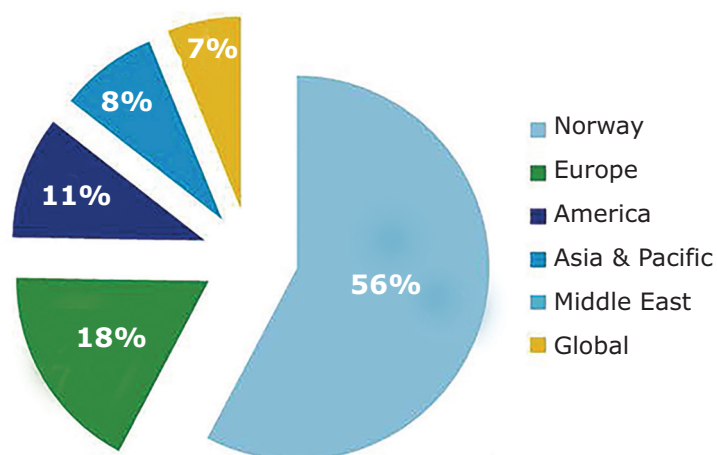
Data last updated: 15 February 2017

* = conversion projects

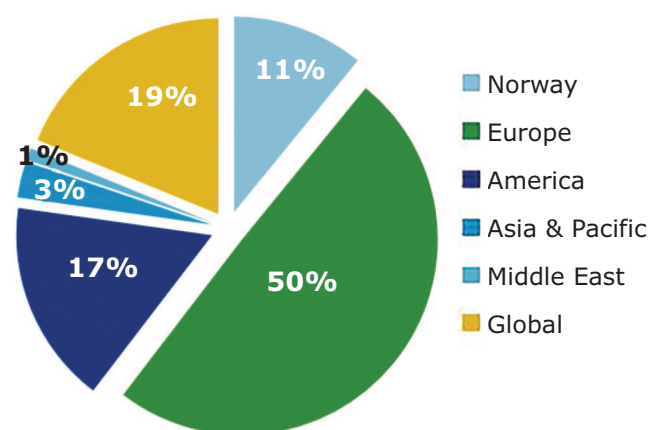
Year	Type of Vessel	Owner	Class
2015	Gas carrier	Evergas	BV
2015	Gas carrier	Evergas	BV
2015	Tug	CNOOC	CCS
2015*	Car/passenger ferry	AG Ems	DNV GL
2015	Tug	NYK	NK
2015	Gas carrier	Chemgas Shipping	BV
2015	Gas carrier	Evergas	BV
2015	PSV	Harvey Gulf Int.	ABS
2015	Container ship	TOTE Shipholdings	ABS
2015	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 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