

LNG Shipping News

AN LNG JOURNAL TITLE ON LNG CARRIERS

25 October 2018

LNGC fleet set for rapid expansion

The LNGC fleet is due to experience its biggest expansion this year.

This will help to continue facilitating spot trade development, meet growing tonne/mile demand, largely driven by rising US LNG flows to Asia, and serve the new wave of supply expected from pre-FID export projects after 2020, a new report from S&P Global Platts said.

The ramp-up of US liquefaction capacity through 2020 will continue to be a key driver of tonne/mile demand and spot shipping prices, while China's growing gas appetite and LNG terminal expansion will likely result in both additional demand and greater seasonality, making shipping flexibility an even greater necessity.

Despite the decline in ship finance and rising interest rates, LNG shipping continues to attract investment.

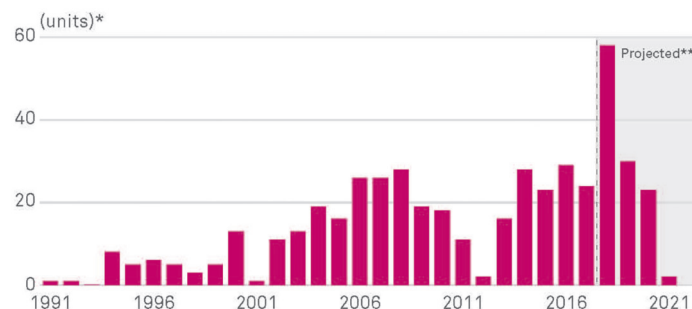
By the end of this year, more than 70 new LNGCs will have been delivered - over 8 mill cu m, compared with 4.1 mill cu m in 2017.

In the first seven months of 2018, 28 large LNGCs were ordered, more than the 26 ordered in 2016 and 2017 combined. The record for new orders was set in 2014 when 62 LNGCs were contracted in the 12-month period.

"The pace of deliveries in 2018 and 2019, which now hold together 94% of the orderbook in unit terms, will shape the industry for many years to come," the head of research with Italian ship brokerage Banchero Costa, Ralph Leszczynski, said, talking with Platts.

In addition, most of the existing LNG fleet will be operational for decades, as the average age of the fleet is only 10.8 years,

2018 WILL SET A NEW RECORD FOR NEW LNG CARRIER ADDITIONS TO THE GLOBAL FLEET



*Data does not include vessels scrapped.

** Projected deliveries after accounting for slippages.

Source: Vessels Value

versus a vessel lifecycle of more than 40 years.

However, the delicate balance in LNG shipping is by no means certain, and will depend on the sector's ability to respond to shifts in supply and demand, including potential trade disruptions emerging from rising tensions between the US and China and the pace at which pre-FID export projects are delivered post 2020, the report warned.

Changing profile

LNGC ownership profile is also changing, with more participants, such as traders and power utilities becoming shipowners, as the LNG trading space becomes more liquid and diversified, and the breakdown of long-term LNG contracts forces traditional shipowners to look for co-investors.

In another report, the IEA has warned that a lack of timely investment in LNGCs could pose a threat to market development and security of supply, which could materialise even earlier than the risk of insufficient liquefaction capacity.

After experiencing two succes-

sive periods of strong investment in the mid-2000s and early 2010s, LNGC orders have fallen since 2016, as the LNG market entered a period of demand uncertainty, confronted with the prospect of ample supply and lower natural gas prices, compared to the high benchmark of the early 2010s, the report said.

Most recent vessels were built in conjunction with the wave of investment in liquefaction capacity that occurred in the late 2000s.

A tight LNGC market would result in higher and more volatile spot charter rates, as well greater risk of vessels being unavailable in the short term, especially in the Atlantic Basin where LNG prices are usually less attractive than in the Pacific, the IEA said.

LNGC availability and volatility in charter rates could therefore become a medium-term concern for the security of natural gas supply. To mitigate this risk - and in addition to investment in new-build capacity - further liquidity and transparency are required to alleviate some of the inflexibilities in the current LNGC trade. ■

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LNGC spot rates head north

Spot day charter rates for LNGCs have hit their highest levels since mid-2012.

This was as a result of low prompt availability of vessels in both the Atlantic and Pacific basins.

Earlier this week, S&P Global Platts assessed Pacific and Atlantic day rates for LNGCs at \$140,000 per day and \$130,000 per day, respectively, up 40% since mid-September. At the same time last year, rates were around \$40,000 per day.

The surge in rates indicates that LNG supply is growing faster than new ships are being delivered. The year 2018 will see the largest number of newbuild LNG carriers added to the global fleet, taking it well past the 500 mark.

Shipping typically accounts for 5%-20% of the delivered LNG price ex-ship, meaning big rate swings can have a significant effect on

the final price of gas, and the ability of traders to arbitrage LNG cargoes between regions.

Day rates first broke the \$100,000 level around mid-September. Shipping sources said no ships were available from independent shipowners across both basins with chartering opportunities focused on relets from period players or traders.

In the Pacific, a spot charter for mid-November was reportedly north of \$160,000 per day, and several multi-month charters in the low-\$100,000s per day.

"What we are about to witness in LNG shipping has only happened twice since 2008 with great magnitude," Nicolay Dyvik, shipping research analyst at DNB Markets told

Platts, adding that LNG freight rates could rise to as much as \$250,000 per day if markets get tighter.

In 2016 and 2017 spot rates were hovering around \$25,000 per day, leaving shipowners struggling to breakeven with nearly 50 ships free on the spot market, Platts reported.

Demand

Soon there will be 27 mill tonnes of new LNG supply that will need vessels to transport the gas. This will be followed by another 40 mill tonnes per year of new LNG projects in the US by 2020, adding to Atlantic basin shipping demand.

"This trend is important to watch because US liquefaction capacity is currently only about one

third of where it will be by the end of 2020. This means that as the US represents a greater and greater percent of global supply, the weighted average shipping distance should also start to trend upwards," Jeff Moore, Head of Asia LNG Analytics at S&P Global Platts, said in the new report 'Supercooled: The evolving LNG fleet driving the global gas boom.'

Platts Analytics estimated that the average shipping distance for a US LNG shipment is 9,268 nautical miles, more than double the 3,936 nautical miles for Australian LNG.

Last week, brokers reported that Korea lines has chartered Stena Bulk's 173,611 cu m 'Stena Crystal Sky' for six months at \$120,000 per day, plus options. ■

Ichthys exports first cargo

The first LNG cargo left INPEX Corp's Ichthys LNG project earlier this week for Japan.

The MOSS-type LNGC 'Pacific Breeze' loaded the first shipment at Darwin destined for the INPEX-operated Naoetsu LNG terminal in Niigata Prefecture.

"First cargo from Ichthys LNG is a historic moment for INPEX Japan and Australia. It demon-

strates our commitment to being a safe, reliable long-term energy supplier," said INPEX President Director Australia, Seiya Ito.

"Ichthys is an iconic project for Australia. With an operating life of around 40 years, Ichthys LNG will be delivering benefits to the Aus-

tralian economy and community for decades to come."

Ichthys will gradually increase its LNG production volume to around 8.9 mill tonnes per year when it reaches its production plateau, which is equivalent to more than 10% of Japan's annual LNG import volume.

About 70% of the LNG produced by Ichthys is to be supplied to Japanese customers.

The LNGC's departure follows the project's shipment of field condensate (ultra-light crude oil), which commenced on 1st October, 2018.

The Project is also scheduled to commence the shipment of LPG later this year. ■



'Pacific Breeze' seen at Darwin with the first Ichthys cargo

NEWS NUDGE

Southern LNG slightly delayed

The first of 10 LNG production units at Kinder Morgan's affiliate Southern LNG company's terminal at Elba Island, Georgia, is now expected to be operational in the first quarter of next year.

The remaining nine units are expected to come online throughout 2019.

Kinder Morgan had anticipated an initial start-up date of 4Q18 for the first LNG production unit at the facility.

Once in full operation, it will have a total liquefaction capacity of around 2.5 mill trill tonnes per year of LNG, equivalent to about 350 mill cu ft per day of natural gas. ■

LNG Shipping News

1st Floor, 30 Warner Street
London EC1R 5EX
United Kingdom
www.lngjournal.com
Tel: +44 (0)20 7253 2700

Publisher

Stuart Fryer

Editor

Ian Cochran
+44 (0) 7748144265
cochran@tankeroperator.com

Ad sales enquiries

Narges Jodeyri
+44 (0)20 7017 3406
narges@lngjournal.com

Subscriptions

Gabi Weck
Tel: +44 (0) 20 7253 2700
gabi@lngjournal.com

Production

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

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Flex buys newbuildings via private share placement

Flex LNG has used a private share placement to partially finance the purchase of five LNGC newbuildings.

They were bought from affiliates of John Fredriksen's investment vehicle, Gevevan Trading, the company's largest shareholder and were originally ordered by Seatankers Management.

The five newbuildings are three MEGI LNGCs, currently under construction at Daewoo Shipbuilding and Marine Engineering (DSME) with scheduled delivery in 2020 and two X-DF LNGCs, on order at Hyundai Samho Heavy Industries

with deliveries slated for 2021.

Each vessel will be acquired for \$180 mill on a delivered basis, including supervision costs, plus another \$6 mill for each for the DSME vessels to fit full reliquefaction systems.

Some 30% of the purchase price is payable within three days from the receipt of the proceeds from a private placement and the remainder is payable upon delivery of the respective vessels.

Flex LNG raised gross proceeds of \$300 mill from the placement in NOK.

Gevevan guaranteed that the placement was fully subscribed and was allocated 57,646,316 shares for around \$100 mill, and retained 44.6% of the company following the placement.

Notices of allocation was distributed to the investors on 11th October, 2018.

DNB Markets, a part of DNB

Bank, Pareto Securities, ABN AMRO Bank, Arctic Securities, Fearnley Securities and Skandinaviska Enskilda Banken acted as managers. Advokatfirmaet BAHN acted as legal advisor to the private placement. ■

Polish utility to buy US LNG

Polish Oil & Gas Co (PGNiG) is to purchase LNG on a long term basis from Venture Global's Calcasieu Pass LNG and Plaquemines LNG export facilities.

The export terminals are currently due on stream in 2022 and 2023, respectively.

Under the terms of the agreement, PGNiG will import the gas on a free on board (FOB) basis, either for domestic use or for resale, over a 20-year period.

The binding contracts were signed between PGNiG and two subsidiaries of Venture Global LNG - Venture Global Calcasieu Pass and Venture Global Plaquemines LNG. Both contracts are the result of an agreement concluded in June, 2018 with Venture Global LNG.

"Recently signed contracts are a milestone towards building PGNiG's position in the global liquefied natural gas market," said Piotr Woźniak, President of the PGNiG Management Board.

"Thanks to the FOB formula, we

will be able to decide, independently and based on our needs at a given time, whether the purchased LNG load should be directed to Poland or be used for further trading through our London office."

"The contract conditions in the US are very attractive. The LNG price is based on the American Henry Hub index along with liquefaction costs," said Maciej Woźniak, Vice President of the PGNiG Management Board for Trade. "These are the first long-term contracts for purchase of LNG from the US announced in Central Europe."

Mike Sabel and Bob Pender, co-CEOs of Venture Global LNG, jointly commented; "We are honoured to become a partner of both Poland and of PGNiG, one of Eu-

rope's most important international oil and gas companies. We are greatly looking forward to developing a long-term supply relationship with PGNiG, who will be joining our existing, high quality partners - Shell, Edison SpA, Galp, BP and Repsol."

The new contracts will provide 2 mill tonnes per annum of LNG, equal to about 2.7 bill cu m of natural gas after regasification. Depending on vessel capacity this would result in 25 cargoes a year.

For the 20 year term, PGNiG has agreed to purchase from each company, 1 mill tonnes per year on an FOB basis, where the seller will deliver LNG to an LNGC at the loading port and the purchaser will freely dispose of the cargo, including deciding on the cargo destination. ■

Tokyo Gas to import LNG Canada gas

Tokyo Gas has signed a heads of agreement (HOA) to receive natural gas from the LNG Canada project (see *LNG Shipping News*, 11th October, page 7).

The HOA was signed with Diamond Gas International Pte Ltd (DGI), a wholly-owned subsidiary of Mitsubishi Corp.

By signing this agreement, Tokyo Gas said it would contribute to the start-up of the first large scale LNG production project in Canada.

This LNG project, in which Mitsubishi Corp holds a 15% interest, is expected to produce 14 mill tonnes per annum of LNG by liquefying natural gas from large reserves in Western Canada at an LNG liquefaction plant to be built at Kitimat on the West Coast of Canada.

Under the terms of the agreement, DGI will offtake 2.1 mill tonnes per annum, while Tokyo Gas will purchase up to 600,000 tonnes per year for 13 years starting in 2026 delivered by ship with flexibility on the final destination.

In addition to access to abundant natural gas in Canada, the proximity of the project to Japan, which will allow voyage times of around 10 days, promises a stable long-term LNG supply, Tokyo Gas said.

Next year marks the 50th anniversary of the first gas shipment received by Tokyo Gas, which arrived on 4th November, 1969. ■

NEWS NUDGE

More orders reported

Thenamaris has firmed up its option for a second 174,000 cu m X-DF powered LNGC at HHI.

She is due for delivery in 2021.

In addition, Minerva Marine was believed to be behind an order for a 174,000 cu m LNGC reported by Samsung recently.

The vessel is due to be delivered in 2021 at a cost of

\$185 mill.

Elsewhere, privately owned Chinese gas distributor ENN Energy has placed an order for an 8,500 cu m LNG bunker vessel at Dalian Shipbuilding Industry Company (DSIC).

To be delivered in 2020, she will not only be used to fuel LNG-powered ships but also to provide LNGC pre-cooling and gas testing services.

GTT receives new DSME order

GTT has won an order from Daewoo Shipbuilding and Marine Engineering (DSME) for the tank design of an 173,400 cu m LNGC.

She will be built on behalf of an undisclosed European shipowner and will be fitted with the NO96 GW technology.

The vessel's delivery is expected by first half 2021. ■

Mid-scale Rostock terminal planned

A joint venture between Novatek and Fluxys, has signed a land lease agreement with the Rostock Port Authority to build a mid-scale LNG transshipment terminal.

The joint company will design, construct, finance, own and operate the terminal, which will have a capacity of around 300,000 tonnes per annum.

LNGCs will bring the gas from the Cryogas-Vysotsk liquefaction facility that Novatek is building in Vysotsk, located near St Petersburg and further LNG deliveries to the consumer market will be made by truck.

The terminal will also have the ability to bunker vessels and load bunkering vessels.

"One of our LNG strategic initiatives is to develop small- to medium-tonnage projects to target niche markets and customer

segments," noted Leonid Mikhelson, Novatek's Chairman of the Management Board, "This approach allows us to build effective marketing channels on different markets. Moreover, the LNG Terminal at Rostock allows us to market LNG as a marine fuel and motor fuel instead of diesel and fuel oil that will contribute to decreasing emissions and improving the environment."

"Gas and gas infrastructure are key to develop a sustainable, reliable and affordable energy system and the Rostock project will allow industry, shipowners and haulage companies to significantly cut emissions impacting health and air



Rostock will soon be home to an LNG transshipment terminal

quality as well as reducing their carbon footprint," Pascal De Buck, Fluxys Managing Director, added. Following the signature of the land lease agreement, Rostock LNG GmbH, owned by Novatek

(49%) and Fluxys (51 %), will proceed with the engineering and permitting processes. ■

FERC examines Rio Grande LNG project

The US Federal Energy Regulatory Commission (FERC) has issued a draft environmental impact statement (EIS) for the Rio Grande LNG Project.

This project is the brainchild of Rio Grande LNG and Rio Bravo Pipeline Company, collectively called RG Developers.

RG Developers requested authorisation under the US Natural Gas Act to site, construct, and operate the following facilities in Jim Wells, Kleberg, Kenedy, Willacy, and Cameron Counties, Texas:

- Six liquefaction trains would be constructed and operated at the Rio Grande LNG Terminal, each with a nominal LNG capacity of 4.5 mill tonnes per annum for export, resulting in the LNG Terminal's nominal capacity of 27 mill tonnes per annum.
- Four LNG storage tanks, each with a net capacity of 180,000 cu m.
- LNG truck loading facilities with four loading bays, each with the capacity to load 12 to 15 trucks per day;
- A refrigerant storage area and truck unloading facilities.
- A condensate storage area and truck loading facilities.
- A new marine slip with two LNGC berths to accommodate simultaneous loading of two vessels, an LNG vessel and support vessel manoeuvring area, and an LNG transfer system.
- A materials off-loading facility in the Brownsville Ship Channel.
- Some 2.4 miles of 42 inch diameter pipeline, including 0.8 miles of dual pipeline, to gather gas from existing systems in Kleberg and Jim Wells Counties - the Header System.
- Around 135.5 miles of parallel 42 inch diameter pipelines originating in Kleberg County and terminating at the Rio Grande LNG Terminal in Cameron County - referred to as Pipelines 1 and 2.
- Four stand-alone metering sites along the Header System.

- Three new compressor stations - one at the LNG Terminal site.
- Two new interconnect booster compressor stations, each with a metering site.
- Other associated utilities, systems, and facilities (yards, access roads, etc).

FERC concluded that construction and operation of the Rio Grande LNG project would result in some adverse environmental impacts, but these impacts would be reduced to less than significant levels. However, the project, combined with other projects within the geographic scope, would result in certain significant cumulative impacts.

Many factors were considered in the determination that the impacts attributable to the Rio Grande LNG project would be reduced to less than significant levels.

The draft EIS comment period closes on 3rd December, 2018. ■

MOL takes delivery of first of three newbuildings

Mitsui OSK Lines (MOL) has taken delivery of the 155,000 cu m MOSS-type LNGC 'Marvel Eagle'.

Prior to her delivery, a naming ceremony was held on 5th September at the Kawasaki Heavy Industries' Sakaide Shipyard.

The vessel is the first of three newbuilding LNGCs, for which MOL and Mitsui & Co signed charter contracts in September, 2014 and January, 2015, respectively.

'Marvel Eagle' will primarily be used to transport LNG from the Mitsui & Co-backed Cameron LNG project in Louisiana, US.

She is claimed to be the first vessel equipped with the high-performance ship operation data collection device, which forms the basis of the FOCUS project that MOL recently announced.

Detailed voyage and engine data will be collected from the vessel during operations and stored in a cloud-based data platform to develop further applications, MOL said. ■

Dynagas LNG prices public offering

Dynagas LNG Partners has priced its public offering of 2,200,000 of its 8.75% Series B fixed to floating rate cumulative redeemable perpetual preferred units at \$25 per unit.

Distributions will be payable on the units to 22nd November, 2023 at a fixed rate equal to 8.75% per annum and from that date, if at a floating rate, if not redeemed.

Dynagas has also granted the underwriters a 30-day option to purchase up to an additional 330,000 units on the same terms and conditions. The offering was expected to close earlier this week, subject to customary closing conditions.

The company said that it intended to use the net proceeds for

general partnership purposes, which may include, among other things, debt repayment, including the outstanding 6.25% senior notes, due on 30th October, 2019, or the funding of acquisitions or other capital expenditures.

The joint book-running managers were Morgan Stanley & Co, UBS Securities and Stifel, Nicolaus & Co. The co-manager for this offering was B Riley FBR, Inc.

Seward & Kissel LLP acted as Dynagas LNG Partners' legal counsel.

Another two Arc7s transit NSR

Two new Arc7s have recently transited the Northern Sea Route (NSR) sailing in opposite directions.

While the 'Vladimir Vize' loaded an LNG cargo at Sabetta for Asia, 'Rudolf Samoylovich' sailed to Sabetta in ballast from the shipbuilder, Daewoo Shipbuilding & Marine Engineering (DSME).

The ships are owned by MOL/COSCO and Teekay, respectively and both were built by DSME. They are the sixth and seventh vessels out of 15 Arc7s that are being built to serve Novatek's Yamal LNG's project.

'Rudolph Samoylovich' is Teekay's second of six Arc7s to be built for the project.

Teekay said that the vessel was delivered nearly three months earlier than planned following a request from Novatek. She transited the NSR after her delivery from the South Korean yard at the end of August.

The seven Yamal LNG Arc7s now in oper-

ation are the 'Christophe de Margerie', 'Boris Vilkitsky', 'Fedor Litke', 'Eduard Toll', 'Vladimir Rusanov', 'Rudolf Samoylovich' and 'Vladimir Vize'.

The vessels still to be delivered will be named - 'Georgiy Brusilov' (2018), 'Boris Davydov' (2018), 'Nikolay Zubov' (2018), 'Nikolay Yevgenov' (2019), 'Vladimir Voronin' (2019), 'Georgiy Ushakov' (2019) and 'Yakov Gakkel' (2019).

The last of the 15 ships has yet to be named.



'Rudolf Samoylovich' recently transited the NSR on her way to Sabetta



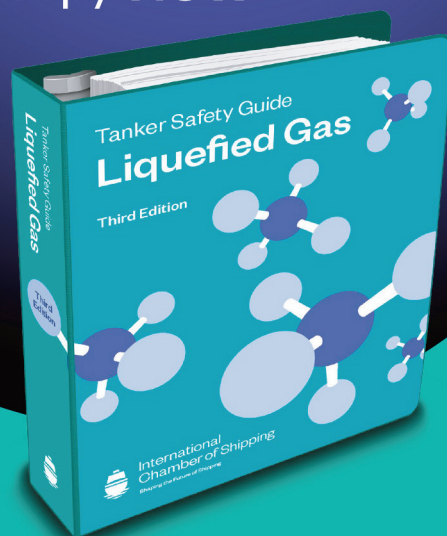
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BMT's simulator software receives DNV GL certification

REMBRANDT, BMT's integrated navigation and manoeuvring simulator suite, has been awarded Class A, B and C certification from DNV GL.

The certification further builds on BMT REMBRANDT's 30-year history as an advanced project engineering support tool, covering marine pilotage, ship operations, port design and risk management associated with complex transportation infrastructure systems, such as LNGCs, FSRUs and FLNGs, the company said.

Dr Phil Thompson, BMT's Director of Simulation and Training Products said: "The combined DNV GL Class A, B, C and existing S certifications reflect that our simulators provide the highest levels of physical and behavioural realism. Our new generation of fully-certified simulation technology is more versatile, hydrodynamically accurate, visually superior and all at a significantly lower cost, thus widening the support and benefit that we already provide to our existing customer base."

This classification award verifies BMT as a quality manufacturer offering a simulator system that complies with STCW 78 and the DNVGL-ST-0033 Maritime Simulator Systems standard. This is in addition to the DNV GL Class S accreditation which BMT REMBRANDT has held for over five years to carry out specialist project-based simulation.

The software is already used by a number of maritime companies



BMT's REMBRANDT simulation package is claimed to be ideal for LNGCs, FSRUs and FLNGs

and organisations for applications, such as training of deck officers, port navigational risk assessments, mooring and understanding complex manoeuvres. More recently, it has been adopted by several statutory marine accident investigation agencies, including the UK's MAIB.

Main market

Dr Thompson told *LNG Shipping News* that the LNG sector was one of the company's main markets for the software. It has already been installed on board LNGCs owned by GasLog and Shell.

For example, last April, Shell International Trading and Shipping Co (STASCo) signed a contract with BMT, to purchase its own in-house REMBRANDT license.

Following several years of using REMBRANDT as a project engineering support tool, STASCo purchased an advanced desktop version with consoles and is using the simulator to support a range of ongoing and future projects involving navigation and STS operations, especially on LNGCs.

Its current training facility will be expanded when STASCo relocates back to its international headquarters in London next year.

The LNGC software library includes four different LNGC types - 125,000 cu m MOSS type, 145,000 cu m membrane, 177,000 cu m MOSS type and a Q-Max.

An emergency response simulation project was also carried out on the FLNG due to be positioned in Mozambique. ■

Tohoku agrees to buy Mozambique LNG

On 12th October, Tohoku Electric entered into an LNG sales and purchase agreement (SPA) with Mozambique LNG 1 Company Pte Ltd.

Mozambique LNG 1 is a dedicated sales company set up by Mozambique LNG project's partners, including Anadarko, in December, 2015.

The SPA follows detailed discussions after the execution of a Heads of Agreement with the Mozambique LNG project shareholders on 15th December, 2017.

Based on the agreement, Tohoku Electric will purchase a maximum of 0.28 mill tonnes per annum for 15 years from Mozambique LNG 1, from the early 2020s when the project is due to go into production.

"This will be our first long-term agreement to procure LNG from the African continent, which will enable us to further diversify our supply sources. In addition, we believe that the agreement will contribute to improving our procurement flexibility, stability, and economics by enabling us to adjust our procurement volume depending on our supply and demand," the Japanese company said. ■

WinGD opens Shanghai engineering centre

Leading LNGC main engine supplier WinGD has established a Engineering Centre in Shanghai.

It was established together with CSSC subsidiary CSPI (China Shipbuilding Power Engineering Institute) to increase its technical capacities by 20%.

In response to the success of the X-DF engines and the planned technical advancements to come, WinGD said it was looking to further expand its resources, continuing its focus on 2-stroke engine designs.

"For nearly three years CSPI

and WinGD engineers have been sharing expertise. While initially the co-operation focused on a few areas only, for instance engineering applications, CSPI's capabilities in developing engine related systems and components has created further, enhanced synergies," said Dominik Schneider, Vice President R&D, WinGD.

"Our new Engineering Centre, in co-operation with CSPI, is a milestone in our efforts to increase

our overall R&D capacities and our global knowledge base. It is one of the cornerstones of our strategy, to further expand our product portfolio and strengthen our market position in both market segments, diesel and dual fuel engines." Klaus Heim, WinGD CEO added.

As part of its mission to achieve engineering excellence through collaboration, WinGD will also continue to invest in its successful engagement with L&T

Technology Services, a leading global engineering services provider.

"The shipping industry is highly volatile and heavily regulated. It is therefore essential for us to partner with global companies like L&T Technology Services who bring cross domain expertise and can understand our complexities to consistently deliver through high quality engineering work." Schneider said. ■

FLNG design receives class society AiP

ABS has awarded an Approval in Principle (AIP) to Hyundai Heavy Industries' (HHI) deepwater FLNG hull design.

HHI claimed that the newbuilding conversion FLNG hull design for off-shore applications can be constructed for about 80% less than the cost of a conventional FLNG hull.

It is based on LNGC designs, combined with the requirements for FLNG production, such as structural reinforcements to take topside module load and a hull designed to allow up to 25 years operation without drydocking.

"ABS is the market leader in the classification of offshore drilling and production units, in-

cluding FLNG vessels, with more than 150 floating oil and gas facilities in the ABS-classed fleet," said ABS Vice President Global Gas Solutions, Patrick Janssens. "We have partnered in leading innovation in the offshore sector for 60 years, and we are proud to enable this latest advanced deepwater FLNG Hull approach from HHI."

HHI developed a technically feasible FLNG hull approach, combining the latest industry trends with first-class shipbuilding practices and ABS rules, maintaining

high safety standards, ABS said.

A low cost near shore FLNG hull was successfully developed and achieved ABS AIP in 2017. The same team from HHI and ABS has recently worked to deliver this harsh environment deepwater hull to meet increasing market demand.

"In the current emerging gas market, a ready-to-convert off-shore FLNG hull, with ABS certification, at affordable CAPEX is an important product for monetisation of gas reserves around the globe. This new line-up from HHI

responds to the requirements of operators and combines HHI's unparalleled expertise in shipbuilding with ABS' stringent safety evaluation," said Hyungkwan Kim, Executive Vice President, HHI's Shipbuilding Division.

The design features a barge-shaped hull, a GTT Mark III containment system with storage for about 192,000 cu m, and provisions to accommodate an internal turret and 45,000 tonne of topside modules to deliver 2.5 mill tonnes per annum of LNG. ■

Höegh FSRU timecharter amended

As a result of Egypt halting LNG imports, Höegh LNG Holdings and Egypt Natural Gas Holdings Co (Egas) have agreed to amend the FSRU 'Höegh Gallant' timecharter contract.

Under the amended contract, 'Höegh Gallant' will be chartered to a third party as an LNGC.

Egas will compensate the company for the rate difference between the original FSRU contract and the new LNGC timecharter. The amended contract is expected to become effective this month and will run to April, 2020, the termination date of the original five-year FSRU contract.

As part of the original FSRU contract with Egas, Höegh LNG has equipment installed on the jetty

at Ain Sokhna with a book value of around \$9 mill as of 30th June, 2018. Since the market value and alternative use of this equipment is unclear, Höegh LNG expects to record an impairment for a corresponding amount for the third quarter of 2018.

Sveinung Støhle, Höegh LNG President and CEO, said: "We are proud to have provided FSRU services to Egas since 2015, during a period in which 'Höegh Gallant's' regasification capacity has been fully utilised, contributing strongly



'Höegh Gallant' is being switched back into the LNGC market

to balancing supply with demand in the Egyptian natural gas market.

"Under this amended contract we maintain our highly valued relationship with Egas, which we hope to further expand in the future as Egypt emerges as a

regional energy hub," he said.

It was later reported that the 'Höegh Gallant' had sailed from Egypt, where she had been moored since 2015, and was heading towards Cheniere's Sabine Pass production facility, according to Refinitiv Eikon data. ■

NEWS NUDGE

World's largest LNG bunker vessel sets sail for Europe

On 17th October, 2018, the world's largest LNG bunker supply vessel, 'Kairos', started her maiden voyage from the Hyundai Mipo shipyard in South Korea to Northwest Europe.

With an LNG capacity of 7,500 cu m, she will be ready for operations before the end of this year based at Klaipeda, Lithuania.

Mahinde Abeynaike, Nauticor CEO, which holds 90% of the joint venture that charters the vessel from Babcock Schulte Energy (BSE), said: "The arrival of the 'Kairos' in the Baltic Sea will set a milestone for LNG as a ship fuel. From then on, supply of LNG as a marine fuel in the Baltic Sea is secured on a large-scale basis."

The vessel has several unique features, including a ballast-free design and the installation of a CNG tank to store vapour return gas from vessels.

Pavilion takes two BW newbuildings

Pavilion is to period charter two 173,400 cu m MEGI BW Group newbuildings from 2019.

Frédéric Barnaud, Pavilion Energy Group CEO, said, "The long-term charters of these MEGI newbuilds from our long-standing shipping partner BW will strengthen Pavilion Energy's global LNG trading activities, especially on long-haul voyages from Atlantic liquefaction plants to Singapore and Asian markets.

"This will reinforce our al-

ready strong Asian LNG supply and trading strategy to connect markets and supplies regionally and globally," he added.

In 2014, Pavilion Energy formed a joint venture with BW - BW Pavilion LNG Pte Ltd, to acquire, manage and charter maritime LNG assets, including LNGCs.

The joint venture's fleet includes two Singapore-flagged LNG newbuilds, 'BW Pavilion Vanda' and 'BW Pavilion Leeara', which will both be on long-term charter to Pavilion Energy starting next year. ■

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WORLD LNG CARRIER ORDERBOOK

Name	Yard	Containment System	Capacity	Propulsion	Delivery Date	Ordered	Primary Owner
Energy Liberty	Japan Marine United Corp	SPB	165000	TFDE	01/08/2018	2014	MOL
Castillo De Caldelas	Imabari	TZ Mk. III	178000	MEGI	01/09/2018	2014	Elcano
Vladimir Vize	DSME	GT NO 96	172410	TFDE - Azipod	01/09/2018	2014	MOL
Kinisis	DSME	GT NO 96	173400	MEGI	15/09/2018	2015	Chandris
British Achiever	DSME	GT NO 96	173400	MEGI	01/10/2018	2014	BP
Georgiy Brusilov	DSME	GT NO 96	172410	TFDE - Azipod	01/10/2018	2014	Dynagas
Marvel Eagle	Kawasaki	Moss	155000	TFDE	19/10/2018	2014	MOL
Jmu Tsu 5071	Japan Marine United Corp	SPB	165000	TFDE	01/11/2018	2014	NYK
British Contributor	DSME	GT NO 96	173400	MEGI	01/11/2018	2014	BP
Boris Davydov	DSME	GT NO 96	172410	TFDE - Azipod	01/11/2018	2014	Dynagas
Marvel Hawk	Samsung	GTT Mark III Flex	174000	XDF	01/12/2018	2014	MOL
Marvel Crane	Mitsubishi H.I.	Moss	177000	STaGE	01/12/2018	2015	NYK
Nikolay Zubov	DSME	GT NO 96	172410	TFDE - Azipod	01/12/2018	2014	Dynagas
Samsung 2150	Samsung	GTT Mark III Flex	174000	XDF	01/01/2019	2014	MOL
Maran Gas Spetses	DSME	GT NO 96	173400	MEGI	01/01/2019	2015	Maran Gas Maritime
Daewoo 2444	DSME	GT NO 96	173400	MEGI	01/01/2019	2014	BP
Mitsubishi Nagasaki 2323	Mitsubishi H.I.	Moss	177000	STaGE	01/01/2019	2015	MOL
Maran Gas Chios	DSME	GT NO 96	173400	MEGI	01/01/2019	2015	Maran Gas Maritime
Maran Gas Hydra	DSME	GT NO 96	173400	MEGI	01/01/2019	2015	Maran Gas Maritime
Hyundai Samho S856	Hyundai Heavy	TZ Mk. III	174000	MEGI	01/01/2019	2015	Teekay LNG
Gaslog Gladstone	Samsung	TZ Mk. III	174000	XDF	01/01/2019	2014	GasLog
Yamal Spirit	Hyundai Heavy	TZ Mk. III	174000	MEGI	01/01/2019	2015	Teekay LNG
Pan Africa	Hudong-Zhonghua	GT NO 96	174000	TFDE	01/01/2019	2014	Teekay LNG
Shinshu Maru	Kawasaki	Moss	177000	STRH	01/02/2019	2015	MOL
British Mentor	DSME	GT NO 96	173400	MEGI	01/02/2019	2014	BP
Nohshu Maru	Mitsubishi H.I.	Moss	180000	STaGE	01/02/2019	2015	NYK
Jmu Tsu 5072	Japan Marine United Corp	SPB	165000	TFDE	01/03/2019	2014	MOL
British Sponsor	DSME	GT NO 96	173400	MEGI	01/03/2019	2014	BP
Hyundai Ulsan 2937	Hyundai Heavy	GTT Mark III Flex	180000	XDF	01/04/2019	2016	SK Shipping
Diamond Gas TBN	Mitsubishi H.I.	Moss	165000	STaGE	01/05/2019	2015	Mitsubishi
Hyundai Ulsan 2964	Hyundai Heavy	GTT Mark III Flex	180000	MEGI	01/05/2019	2017	Knutzen
Bushu Maru	Mitsubishi H.I.	Moss	180000	STaGE	01/06/2019	2015	NYK
Flex Constellation	DSME	GT NO 96	173400	MEGI	01/06/2019	2017	Flex LNG
Hyundai Ulsan 2963	Hyundai Heavy	GTT Mark III Flex	180000	MEGI	01/06/2019	2017	Knutzen
Sohshu Maru	Kawasaki	Moss	177000	STRH	01/07/2019	2015	MOL
Hyundai Ulsan 2938	Hyundai Heavy	GTT Mark III Flex	180000	XDF	01/07/2019	2016	SK Shipping
Jmu Tsu 5073	Japan Marine United Corp	SPB	165000	TFDE	01/07/2019	2014	MOL
Daewoo 2430	DSME	GT NO 96	172000	TFDE - Azipod	01/07/2019	2014	Teekay LNG
Maran Gas Syros	DSME	GT NO 96	173400	MEGI	01/07/2019	2014	Maran Gas Maritime
Gaslog Windsor	Samsung	GTT Mark III Flex	180000	XDF	01/07/2019	2017	GasLog
Kawasaki Sakaide 1729	Kawasaki	Moss	155000	TFDE	01/08/2019	2014	MOL
Daewoo 2431	DSME	GT NO 96	172000	TFDE - Azipod	01/08/2019	2014	Teekay LNG
Flex Courageous	DSME	GT NO 96	173400	MEGI	01/08/2019	2017	Flex LNG
Daewoo 2432	DSME	GT NO 96	172410	TFDE - Azipod	01/09/2019	2014	MOL

DFDE = dual fuel diesel engines, STRH = steam turbine reheat / ultra steam turbine, MEGI = marine electric gas injection, DRL = slow speed diesel, FSRU = vessel with regas capacity, FLNG = floating LNG production unit
Data last updated = 6th June 2018

Name	Yard	Containment System	Capacity	Propulsion	Delivery Date	Ordered	Primary Owner
Mitsubishi Nagasaki 2322	Mitsubishi H.I.	Moss	177000	STaGE	01/09/2019	2015	MOL
Daewoo 2466	DSME	GT NO 96	173400	MEGI	01/10/2019	2016	Maran Gas Maritime
Daewoo 2433	DSME	GT NO 96	172000	TFDE - Azipod	01/10/2019	2014	Teekay LNG
Daewoo 2467	DSME	GT NO 96	173400	MEGI	01/11/2019	2016	Maran Gas Maritime
Daewoo 2489	DSME	GT NO 96	173400	MEGI	01/11/2019	2015	BWGas
Daewoo 2434	DSME	GT NO 96	172000	TFDE - Azipod	01/11/2019	2014	Teekay LNG
MOL HUDONG-ZHONGHUA 1/4	Hudong-Zhonghua	GT NO 96	174000	MEGI	01/12/2019	2017	MOL
DSME 2490	DSME	GT NO 96	173400	MEGI	01/02/2020	2018	BWGas
MOL HUDONG-ZHONGHUA 2/4	Hudong-Zhonghua	GT NO 96	174000	MEGI	01/03/2020	2017	MOL
HHI NYK/EDF	Hyundai Heavy	GTT Mark III Flex	174000	XDF	30/04/2020	2018	NYK
DSME 2491	DSME	GT NO 96	173400	MEGI	01/05/2020	2018	BWGas
Daewoo 2478	DSME	GT NO 96	173400	MEGI	31/05/2020	2017	Maran Gas Maritime
Samsung 2213	Samsung	GTT Mark III Flex	180000	XDF	01/06/2020	2016	GasLog
HHI / Total	Hyundai Heavy	GTT Mark III Flex	174000	XDF	01/06/2020	2018	Cardiff Marine
HHI / Total / Sovc	Hyundai Heavy	GTT Mark III Flex	174000	XDF	01/06/2020	2018	Sovcomflot
HHI / Cardiff #1	Hyundai Heavy	GTT Mark III Flex	174000	XDF	01/06/2020	2018	Cardiff Marine
HHI / Cardiff #2	Hyundai Heavy	GTT Mark III Flex	174000	XDF	01/06/2020	2018	Cardiff Marine
Flex Aurora	Hyundai Heavy	GTT Mark III Flex	174000	XDF	01/06/2020	2018	Flex LNG
SHI Gaslog #1	Samsung	GTT Mark III Flex	180000	XDF	01/06/2020	2018	GasLog
Hyundai Ulsan 3086	Hyundai Heavy	GTT Mark III Flex	180000	MEGI	01/06/2020	2018	Knutsen
Daewoo 2469	DSME	GT NO 96	173400	MEGI	30/06/2020	2016	Maran Gas Maritime
MOL HUDONG-ZHONGHUA 3/4	Hudong-Zhonghua	GT NO 96	174000	MEGI	01/07/2020	2017	MOL
DSME 2479	DSME	GT NO 96	173400	MEGI	01/08/2020	2018	John Fredriksen
Flex America	Hyundai Heavy	GTT Mark III Flex	174000	XDF	01/08/2020	2018	Flex LNG
DSME 2480	DSME	GT NO 96	173400	MEGI	01/09/2020	2018	John Fredriksen
SHI Gaslog #2	Samsung	GTT Mark III Flex	180000	XDF	01/09/2020	2018	GasLog
MOL HUDONG-ZHONGHUA 4/4	Hudong-Zhonghua	GT NO 96	174000	MEGI	01/10/2020	2017	MOL
DSME 2483	DSME	GT NO 96	173400	MEGI	01/10/2020	2018	Alpha Gas
DSME 2484	DSME	GT NO 96	173400	MEGI	01/12/2020	2018	Alpha Gas
DSME Minerva #1	DSME	GT NO 96	173400	MEGI	01/03/2021	2018	Minerva Marine
DSME Minerva #2	DSME	GT NO 96	173400	MEGI	01/07/2021	2018	Minerva Marine

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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 / 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	Triputra (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 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 Innvovation	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas

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 = 22nd October 2018

Built	Name	CBM	Cargo Type	Trading area	Trading in LNG?	Ship Owner / Operator
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
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

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