

LNG Shipping News

AN LNG JOURNAL TITLE ON LNG CARRIERS

2 May 2019

Qatar Petroleum to ramp up LNGC fleet

Qatar Petroleum (QP) has issued an invitation to tender to build a new LNGC fleet.

“With this significant step, Qatar Petroleum embarks on another major LNG shipbuilding campaign expected to initially deliver 60 LNG carriers in support of the planned production expansion, with a potential to exceed 100 new LNG carriers over the next decade,” Saad Sherida Al-Kaabi, Qatari Minister of State for Energy Affairs and QP President & CEO, explained.

The tender was circulated on 22nd April, and calls for the construction of new LNGCs to serve Qatar’s North Field Expansion (NFE) project, which will increase the country’s LNG production capacity from 77 mill tonnes per annum to 110 mill tonnes per annum starting in 2024.

In addition to covering ship construction, the tender includes shipping requirements for LNG volumes to be purchased and offtaken by Ocean LNG, a 70:30 joint venture between Qatar Petroleum and ExxonMobil, from the US Golden Pass LNG project, which is currently under construction and is planned to start exporting by 2024.

The tender also includes options for replacements to Qatar’s existing LNGC fleet.

“This tender, along with the recently released Engineering, Procurement and Construction tender



‘Tembek’ will soon be joined by a new generation of LNGCs. She was the first of the Q-Flex and Q-Max vessels to be delivered in 2007

for four new mega LNG trains planned as part of the NFE project, constitute two monumental and historical milestones, as we make major strides in our commitment towards the further development of the world’s largest non-associated gas field,” Al-Kaabi added.

Qatargas will head up the shipbuilding programme on behalf of QP. The company previously ordered 45 Q-Flex and Q-Max ships, the world’s largest LNGCs, which today constitutes the backbone of Qatar’s fleet.

More newbuildings

Elsewhere, Samsung Heavy Industries has clinched a Won1.1 trill (\$963 mill) contract to build an offshore oil storage facility to process oil or natural gas.

In a regulatory filing, the shipbuilder said that it will deliver an

FPSO for an Asian firm, said to be Reliance Industries, by March, 2022.

South Korean news agency Yonhap said that the FPSO will be used for Reliance Industries’ MJ deepwater gas and condensate project off India’s east coast but it will be able to move to other locations as needed.

Meanwhile, Capital Gas has firmed up an option for another 174,000 cu m LNGC at HHI.

This will be the sixth vessel in the series and she is due for delivery in 2021.

It has also been reported that BP has added the newbuilding LNGCs ‘British Partner’, ‘British Achiever’, ‘British Contributor’, ‘British Listener’, ‘British Mentor’ and ‘British Sponsor’ to its fleet.

Ordered in 2014, the 173,400 cu m LNGCs were built at Daewoo Shipbuilding and Marine Engineering (DSME).

Each of the new vessels is fitted with two ME-GI propulsion systems and a proprietary full reliquefaction system (FRS) designed by DSME.

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“ This tender...constitute two monumental and historical milestones... ”

- Saad Sherida Al-Kaabi, Qatari Minister of State for Energy Affairs and QP President & CEO

GasLog Partners' LNG market update and outlook

GasLog has taken its usual look at the state of play in the first quarter 2019 presentation with the help of leading analysts.

Despite LNG demand in 1Q19 being negatively impacted by warmer than usual weather in the Northern Hemisphere winter, global LNG imports during the period totaled 88 mill tonnes, compared to 79 mill tonnes in the first quarter of 2018, or 11% growth, according to Poten & Partners.

The longer-term outlook for natural gas demand continued to strengthen in 1Q19. In its recent LNG Outlook 2019, Shell predicted that natural gas would satisfy 41% of global energy demand growth over the 2018-2035 period, with renewables satisfying 30%.

Shell forecasts that LNG will be the fastest growing gas supply source, with demand potentially reaching around 700 mill tonnes in 2035, compared to delivered volumes of 319 mill tonnes in 2018.

According to Wood Mackenzie, the global LNG supply hike was principally driven by new supply additions in the US, Australia and Russia. For 2019, supply is estimated to be 365 mill tonnes, or 38 mill tonnes (12%) higher than 2018, driven by the continued ramp-up of 2018 supply additions and new project start-

ups in the US (Cameron, Freeport, Elba Island and Corpus Christi Train 2) and Australia (Prelude).

After a brief lull following the elevated levels of new offtake agreements seen in the second half of 2018, activity recently picked up with nine new long-term supply agreements agreed or signed for over 10 mill tonnes per annum, the analyst said.

Wood Mackenzie estimated that, in addition to the Golden Pass project, which reached final investment decision (FID) in February, 2019, 50 mill tonnes per annum of new capacity should be sanctioned in 2019, including Arctic LNG-2 (Russia), Mozambique Area 1, Calcasieu Pass, Sabine Pass Train 6 (both US) and Woodfibre LNG (Canada). A further 90 mill tonnes of capacity could also reach FID in 2019 or 2020.

Weak markets

In contrast to these positive longer-term trends, 1Q19 saw relatively weak LNG commodity and shipping markets. Low LNG prices, particularly in North Asia, reduced the incentive to ship LNG cargoes from the Atlantic Basin to the Pa-



'Gaslog Santiago' started a multi-year charter in August last year (see page 5)

cific Basin, thus reducing tonne/miles - a key driver of demand for LNG spot shipping.

Furthermore, front-end weighting of 2019 LNGC newbuilding deliveries and unscheduled downtime at facilities in Australia and Malaysia all added to prompt shipping availability.

According to Poten, there were 57 spot fixtures reported in 1Q19, a 19% decrease on the 70 spot fixtures for the same period in 2018.

As a result, there was ample prompt vessel availability, which impacted headline spot LNG shipping rates, fleet utilisation, positioning fees and ballast bonuses.

TFDE headline rates, as re-

ported by Clarksons, averaged \$60,000 per day in 1Q19, compared to \$68,000 per day in 1Q18 and \$150,000 per day in 4Q18. Headline TFDE spot rates are currently (late April) assessed at \$34,000 per day, with rates having stabilised in recent weeks as charterers look to capitalise by locking in shipping capacity for the remainder of 2019 and into 2020.

We expect that prompt vessel availability will decline throughout 2019 and 2020 given the significant forecast LNG supply additions outlined above. As a result, rates are expected to rise from current levels, which will be dependent on several factors, GasLog said. ■

LNG STS facility for Kola Peninsula

Russia is to spend around RR70 bill to build a new Arctic terminal on the Kola Peninsula for storage and reloading of LNG.

The investment plan of the installation was approved this week by Prime Minister Dmitry Medvedev. It is scheduled to be ready for operations in 2023, according to the Barents Observer.

The project includes the building of two floating storage facilities, a supporting pier and the necessary coastal infrastructure.

This comes only a few weeks after the Russian government approved a similar terminal project on the country's Pacific coast, at Bechevinka on the Kamchatka peninsula.

The two terminals will be operated by Novatek for its major LNG project developments in the Arctic.

The government document did

not specify where the new terminal will be built. However, Novatek had earlier said that it wanted it to be located in Ura Guba, a fjord that houses one of the Northern Fleet's most important naval bases, the Barents Observer said.

Ura Guba is located about 50 km to the northwest of Murmansk. It has a deep and year-round ice-free

fjord, and is considered among the most favourable spots for shipping and logistics on the peninsula.

Since late 2018, Novatek has engaged in LNG ship-to-ship (STS) transshipments in Norway's Sarges Fjord.

Later this year, these operations will be moved to Russian waters, Novatek head Leonid Mikhelson had already advised. ■

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Port Kembla gets NSW government nod

The Australian New South Wales Government has awarded development consent to Australia Industrial Energy's (AIE) Port Kembla Gas Terminal (PKGT).

This decision by the NSW Minister for Planning, Rob Stokes, came after a thorough review of the project's Environmental Impact Statement (EIS).

PKGT could supply more than 70% of NSW's natural gas needs and now approval has been granted, is on track to deliver first gas to customers in late 2020, AIE said.

It could also support a major injection to NSW's power network with AIE proposing an 800 MW gas-fired power station, in a second phase of the project.

The power station, to be located in the Illawarra, would be fueled by gas from the PKGT.

The Aus\$250 mill project stakeholders have already entered into an agreement with Höegh LNG to

supply an FSRU.

Port Kembla was chosen after a comprehensive evaluation process by AIE that assessed the long-term industrial nature of the site, port operations, berth configuration, proximity to existing east coast gas transmission infrastructure and the expected key customer base, as well as strong support from the local community.

The joint venture partners with AIE include Squadron Energy; Marubeni Corp and JERA.

AIE said it will ship LNG from a range of sources, including domestic Western Australian and global suppliers.

Gaku Takagi, Jera's Executive Officer, Head of the Upstream Resources Business Group, said: "The Port Kembla Gas Terminal has the

potential to be an important new entrant in the Australian east-coast energy market. We look forward to providing the best solutions to secure stable and competitive gas supply for the businesses and people of NSW by utilising our own expertise as one of the world largest LNG players."

Tsuyoshi Ikeda, General Manager of Marubeni, added: "Marubeni has made careful choices about its trading and investment activities in Australia for over 60 years. This project can bring new supplier competition, new gas volumes and security of supply to NSW. We see the PKGT as another important and productive investment and we are keen to realise the promising potential of this project." ■

Teekay LNG confirms three-year charter

Teekay LNG Partners has secured a new, three-year fixed-rate charter contract for the LNGC 'Magellan Spirit' to an integrated oil and gas company commencing this summer.

Concurrently, Teekay LNG extended the in-charter of the 'Magellan Spirit' until the summer of 2022.

In addition, Teekay GP, the general partner of Teekay LNG Partners, has declared a cash distribution of \$0.19 per common unit for first quarter of this year, representing a 36% increase over the previous quarter's distribution.

The cash distribution is payable on 15th May, 2019 to all common unitholders of record on 7th May, 2019.

"We are excited to be able to announce a significant increase in Teekay LNG's distribution," Mark Kremin, President and CEO of Teekay Gas Group said. "Our new annual distribution of \$0.76 per unit is supported by our diverse portfolio of long-term fixed-rate LNG contracts.

"Importantly, our new distribution level strikes a balance between providing a meaningful increase in returns to our unitholders, while simultaneously allowing Teekay LNG to continue along its existing delevering path.

"Including the new, three-year charter, the Partnership's LNG carrier fleet is approximately 97, 93 and 92% fixed for the remainder of this year, 2020 and 2021, respectively, which further supports Teekay LNG's expected earnings growth and continued deleveraging profile over the next few years," he concluded. ■

MOL names two newbuildings

Mitsui OSK Lines (MOL) held a naming ceremony for two newbuilding LNGCs at Japan Marine United Corp's (JMU) Tsu shipyard on 24th April.

They were named 'Energy Innovator' and 'Energy Universe' and were built to transport LNG from the US Cove Point LNG project to Tokyo Gas receiving facilities.

The two 165,000 cu m vessels are the 10th and 11th LNGCs to be owned and managed by Tokyo LNG Tanker Co. MOL is involved in the management of eight of the ships, including the two newbuildings.

They are each fitted with two self-supporting prismatic shape IMO Type B (SPB) cargo tanks and are powered by tri-fuel diesel-

electric propulsion systems.

In addition, at Mitsubishi Shipbuilding a christening ceremony was held on 19th April for an LNGC, currently under construction for Mitsubishi Corp and Nippon Yusen Kabushiki Kaisha (NYK Line).

The new 165,000 cu m ship, named 'Diamond Gas Sakura', is the third 'Sayarigo STaGE' type vessel built for the two companies.

After her completion and handover this month, 'Diamond Gas

Sakura' will join the first two ships, 'Diamond Gas Orchid' and 'Diamond Gas Rose', in shipping LNG for the Cameron LNG project.

Meanwhile, SK E&S has completed the construction of two LNGCs - 'Prism Agility' and 'Prism Brilliance'.

They were due to be delivered from Hyundai Heavy Industries Ulsan yard by the beginning of this week.

The two vessels were built for a charter to SK Shipping to transport US shale gas from Freeport LNG liquefaction terminal in the Gulf of Mexico starting in the first half of 2020.

They are membrane-type vessels of 299 m long and 48 m wide. They will use natural gas as the main fuel.

They are also claimed to be able to minimise the LNG evaporation rate to 0.085% per day by adopting GTT's Mark III Flex containment system. ■



'Energy Innovation' was one of two vessels named at JMU's Tsu shipyard

NEWS NUDGE

GasLog appoints Paolo Enoizi as COO designate

GasLog Ltd and GasLog Partners have appointed Paolo Enoizi as Chief Operating Officer (COO) Designate of both companies.

Enoizi, who will be based in Piraeus, Greece, will take up his role in August, 2019 and initially work alongside current COO Richard Sadler to ensure a smooth transition of responsibilities.

He was most recently Managing Director of Stolt Tankers Rotterdam, a subsidiary of Stolt Nielsen Limited, where he was responsible for the operation of over 100 chemical tankers, 200 people ashore and over 4,000 seafarers. ■

FERC busy on several fronts

The US Federal Energy Regulatory Commission (FERC) has issued several statements recently on the state of play of various projects.

For example, FERC said it had prepared a final environmental impact statement (EIS) for the Annova LNG Brownsville project.

Annova had indicated that up to 125 LNGCs would be required to export the 6.95 mill tonnes of LNG per year.

In addition, FERC gave approval for the construction and operation of Semptra Energy's Port Arthur LNG export facility in Jefferson County, Texas.

"With FERC's order and the commercial momentum of the Port Arthur LNG project, we are one step closer to reaching a final investment decision and delivering low-cost, reliable and clean US natural gas to world

markets," said Carlos Ruiz Sacristán, Semptra North American Infrastructure Chairman and CEO.

This followed a Final Environmental Impact Statement (FEIS), issued by FERC in February of this year.

Development of the Port Arthur LNG project is still contingent upon obtaining additional customer commitments, completing the required commercial agreements, securing all necessary permits, and reaching a FID, the company said.

FERC has also approved the Driftwood LNG and Pipeline project.

The order for the Driftwood

LNG project authorised the siting, construction and operation of liquefaction facilities that would export an estimated 27.6 mill tonnes of LNG per year.

The LNG facilities would be located in Calcasieu Parish, La.

FERC also said it had prepared a final environmental impact statement (EIS) for the Gulf LNG liquefaction project.

Gulf LNG intends to construct, own, operate, and maintain new inter-connection and metering facilities for the existing Gulf LNG Pipeline in Jackson County, Mississippi.

As of the middle of April, there were 10 LNG export projects pending at the Commission. ■

Venture Global in third LNG project

It has been widely reported that Venture Global has plans for a third LNG export project to be located on the US Gulf Coast.

Called Delta LNG, the project proposed for Plaquemines Parish, Louisiana would have a peak capacity to process 24 mill tonnes of LNG, according to documents filed with the Federal Energy Regulatory Commission (FERC), local media reported.

Venture Global was said to have filed a request to start permitting the LNG project along with an associated 287-mile pipeline called Delta Express Pipeline. The pipeline would connect Perryville, Louisiana, with the LNG plant.

Construction could start as soon as late 2021 and the plant would be operating by November, 2024.

The company reportedly said it would file formal plans with FERC in November of this year. ■

Keppel receives final approval for 'Gimi' FLNG conversion

Keppel Shipyard has received the Final Notice to Proceed (FNTP) from Gimi MS Corp, a subsidiary of Golar LNG Limited, to commence the full conversion work for the Gimi FLNG project (see LNG SN 18th April, page 4).

The total contract is worth \$947 mill and follows the issuance of the Limited Notice to Proceed (LNTN) on 17th December, 2018.

Keppel Shipyard's conversion work of the Moss type FLNG into an FLNG includes the design, detailed engineering and procurement of the marine systems, as well as conversion-related construction services.

This will be similar to the work undertaken on the first FLNG, 'Hilli Episeyo', which Keppel undertook for Golar, but will be customised for the 20-year BP Greater Tortue Ahmeyim contract offshore West Africa.

Delivery of the vessel is expected in first half of 2022.

Chris Ong, CEO of parent Keppel O&M, said, "We are glad to continue this strong partnership with Golar on such a successful FLNG solution. The success of the 'Hilli Episeyo'

has provided the industry with strong proof of the attractiveness of Golar and Keppel's conversion solution.

"This has further strengthened our offerings along the gas value chain. Leveraging our engineering as well as execution expertise and LNG capabilities, we are able to partner customers in developing innovative and fit-for-purpose solutions to meet the needs of the market."

Iain Ross, Golar LNG CEO, said, "Golar looks forward to working closely with Keppel on another Mark I FLNG and has a high degree of confidence in Keppel's ability to safely deliver FLNG Gimi on time and within budget."

Keppel Shipyard will once again engage Black & Veatch for the conversion to provide design, procurement and commissioning support services for the topsides, as well as the liquefaction process,

using its established patented PRICO technology.

"The lower and highly predictable costs of projects constructed in a controlled shipyard environment are another critical advantage offered by FLNG," said Bob Germinder, Black & Veatch Senior Vice President and Managing Director of Floating Oil & Gas Solutions. "This notice to proceed underscores Black & Veatch's standing as a trusted partner with companies moving to meet the world's demand for LNG."

When completed, the 'Gimi FLNG' will be stationed at a nearshore hub located on the Mauritania and Senegal maritime border, and is expected to begin production in 2022 as part of the first phase of the Greater Tortue Ahmeyim project.

The unit will be designed to produce an average of around 2.5 mill tonnes of LNG per annum. ■

Derivatives and charter expirations hit GasLog Partners' profits

GasLog Partners has reported first quarter 2019 IFRS and Partnership performance results for revenues, profit, adjusted profit and EBITDA of \$86.3 mill, \$20.4 mill, \$27 mill and \$62.9 mill, respectively.

Cash distribution of \$0.55 per common unit for 1Q19, was unchanged from 4Q18 and 3.8% higher than 1Q18.

Giving his account of 1Q19 results, CEO Andrew Orekar, commented: "In the first quarter, GasLog Partners continued to execute our strategy, announcing the accretive acquisition of the 'GasLog Glasgow' and expanding our fleet to 15 LNG carriers. This transaction is the Partnership's third completed drop-down in the last 12 months, and significantly increases our contracted revenues, EBITDA, distributable cash flow and contracted days to 91% in 2019 and 74% in 2020. As previously communicated, no new common equity was issued to fund this acquisition.

"During the quarter, we refinanced in full our 2019 debt ma-

turity with a new loan agreement at a reduced margin above LIBOR, compared to the previous facility. The refinancing provides \$90 mill of incremental liquidity for the Partnership with an improved covenant package. Following the transaction, the Partnership's next debt maturity is not until 2021.

"Looking ahead, GasLog's recent commercial successes, including new, multi-year charters with Endesa and JERA, have increased our drop-down pipeline to 13 vessels. Despite seasonal weakness in spot LNG shipping markets due to warmer than normal winter temperatures, combined with high inventory levels, we expect the spot market to strengthen as we move through 2019, supported by the expected increase in new LNG supply over the balance of

the year, especially from US projects.

"With the 'GasLog Glasgow' acquisition now closed, we are re-iterating our year-on-year distribution growth guidance of 2% to 4% in 2019. Our guidance reflects the positive outlook for the LNG shipping market and our recently completed accretive acquisitions, while also considering our two scheduled drydockings and one vessel coming off charter in late 2019.

"In addition, while we expect distributions to continue serving as our primary means of returning capital to unitholders, in the first quarter GasLog Partners authorised a unit buyback programme of up to \$25 mill, and we expect to opportunistically repurchase common units as market conditions warrant," he concluded.

The profit decrease in 1Q19, compared to the same period in 2018, was mainly attributable to a \$12 mill drop in gains from the mark-to-market valuation of derivatives and a \$5.5 mill fall in revenues due to the expirations of the initial timecharters of 'GasLog Shanghai', 'GasLog Santiago' and 'GasLog Sydney' in May, June and September, 2018, respectively.

New charters

Following the cessation of their initial charters, 'GasLog Shanghai' has been trading in the spot market, 'GasLog Santiago' began a new multi year charter in August, 2018 and 'GasLog Sydney' began a new 18 month charter in December, 2018.

As a result, the average daily hire rate fell from \$72,954 for 1Q18 to \$68,840 for 1Q19, GasLog Partners said. ■

NEWS NUDGE

WinGD reports strong first quarter

WinGD has reported a very solid order intake for the first quarter of 2019 for its low-pressure, dual-fuel 2-stroke engines. Over 200 X-DF engines are now on order and/or delivered.

"This doesn't mean that there isn't still a considerable amount of debate about what the future fuels will be, but it does give owners peace of mind that their vessels will be compliant, safe and reliable for many years to come.

"LNG is the bridge which will get us closer to a carbon neutral future. Every day that passes more and more of the engines ordered for propelling deepsea vessels are choosing LNG as fuel. The reasons are compelling: lower emissions, less CO2 and offered at a very attractive price, compared to 0.5% sulfur fuels," said Rolf Stiefel, WinGD's Vice President Sales.

The 1Q19 closed with 32 new X-DF engines ordered.

Bangladesh's second FSRU arrives

Bangladesh's second liquefied natural gas (LNG) storage and regasification vessel has arrived ahead of schedule with a full cargo loaded in Qatar.

The FSRU 'Summit LNG' is moored 6 km off the island of Moheshkhali in Cox's Bazar, Singapore-based Summit Power International said.

Summit LNG (SLNG) has timechartered the vessel from US-based Excerlate Energy for 15 years. The FSRU will send out regasified liquified natural gas (RLNG) via subsea pipeline connected to the national grid. The unit is able to regasify 500 mill cu ft of LNG daily. ■



Summit FSRU seen arriving in Bangladesh

Nakilat reports net profit increase

Nakilat has announced a net profit of QR236 mill for the first quarter of this year, compared to QR217 mill in the same period last year - an increase of 9%.

This increase was mainly due to the acquisitions of two LNGCs and one FSRU last year, and higher volume of projects at Nakilat's shiprepair facility. The positive results were also attributed to the rationalisation of operational expenses and enhanced operational efficiency, the company said.

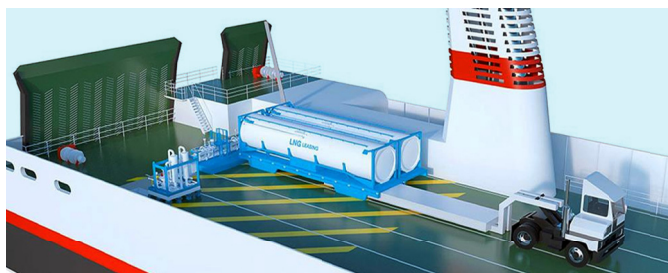
Nakilat has grown its international portfolio through the recent expansion project with Maran Gas Ventures to include four additional LNGCs.

Including the four LNGCs under the new joint venture, the number of Nakilat's vessels has increased to 74, accounting for about 11.5% of the global LNG fleet in carrying capacity.

Complemented by strategic long-term agreements with well-established charterers and its own determination to operate sustainably, Nakilat has managed to maintain steady cash flow and generate positive value for its shareholders, the company said. ■

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Flex LNG in sale and charter back move

Flex LNG has agreed a sale and charter back deal with Hyundai Glovis for the LNGCs 'Flex Endeavour' and 'Flex Enterprise'.

Under the terms of the deal, Flex LNG will sell the vessels for \$420 mill gross, or \$300 mill net adjusted for a non-amortising and non-interest bearing seller's credit of \$120 mill.

The two LNGCs will be timechartered back to subsidiaries of Flex LNG for 10 years. The company will also have options to acquire the vessels during the timecharter period.

At the end of the 10-year charter, Flex LNG will have the right to acquire the vessels and Hyundai

Glovis will have the right to sell the vessels back to Flex LNG for \$150 mill, net of the \$120 mill seller's credit.

The existing shipmanagement agreements will be novated to Hyundai Glovis.

This transaction remains subject to customary closing conditions and is expected to close in the third quarter of 2019.

As a result of the sale, the existing mortgage loans for the two vessels totaling around \$194 mill will be prepaid and the transac-

tion will thus significantly increase Flex LNG's liquidity.

At the same time, Flex LNG said that the \$250 mill bank facility agreement for 'Flex Constellation' and 'Flex Courageous', announced on 28th February, 2019, have now been signed.

The funds will be available for drawdown in connection with the scheduled deliveries in June and August, respectively.

Øystein Kalleklev, Flex LNG CEO, said: "We are pleased to announce a partnership with Hyundai

Glovis, a top-tier global logistics and distribution company. The transaction secures us long-term financing at attractive terms and will significantly boost our cash position by more than \$100 mill.

"With the two financings, we are very well capitalised to take delivery of our remaining new-buildings. Cash break-even levels of less than \$50,000 on average for these two financings demonstrate our ability to raise competitive and long-term financing from a diverse set of funding sources," he said. ■

EXMAR looks to refinance

LNG and LPG owner and operator, EXMAR has reported first quarter 2019 EBITDA, as per the proportionate consolidation method, of \$13.6 mill, compared with \$41.5 mill for 1Q18, which included \$31.7 mill in capital gains.

EBIT for the quarter was \$0.3 mill, compared with \$31.3 mill for 1Q18, which again included capital gains.

The EBIT for the LNG Infrastructure division was a negative \$3 mill, compared to \$29.6 mill in 1Q18, which included a \$30.9 mill capital gain on the sale of the 'Excelsior'.

EXMAR's barge-based FSRU received hire in full from Gunvor from October, 2018, according to the contract. Its financing is progressing on schedule and should

be fully committed during 2Q19.

The 'Tango' FLNG, installed and moored at Bahia Blanca, Argentina, is being commissioned and has already received its first gas and LNG cool down cargo. Upon completion of the commissioning the unit will be presented to the customer for final acceptance.

From early May, 'Tango' is expected to start generating earnings and as from September, the unit should be fully on stream.

In the first months of 2019,

EXMAR strengthened its liquidity position through the refinancing of the remaining four pressurised vessels and the refund of its installments following the cancellation of the LPG carrier shipbuilding contracts with Hanjin Heavy industries.

It has also ordered a couple of LPG carriers announced this week.

The company is said that it was still looking to refinance its existing bond of about \$121.4 mill, which falls due on 7th July, 2019. ■

Brownsville to get deeper access channel

On 24th April, US Deputy Secretary of Energy, Dan Brouillette met with Brownsville, Texas port officials to sign a channel deepening project to allow large LNGCs access to a proposed export terminal.

The deepening project is a joint venture between the US federal government, Brownsville and LNG project developer, NextDecade.

"Brownsville is the latest recipient of the enormous growth in energy production around the country, which has allowed America to enhance our economy

and our foreign policy position around the world," said Brouillette in a statement posted on Twitter.

NextDecade's projects include Rio Grande LNG at Brownsville and an associated 4.5 bill cu ft per day gas supply line - the Rio Bravo Pipeline. This new 140-mile pipeline will connect up to multi-

ple supply sources in the Agua Dulce region to provide enough gas for the planned 27 mill tonnes per annum terminal.

The LNG project producer has already received EPC bids from Fluor and Bechtel for the project and has also recently signed a 20-year sale and purchase agreement (SPA) with Shell. ■

NEWS NUDGE

Gail in hunt for 10 US LNG cargoes

It has been reported that Gail India has tendered for 10 LNG cargoes to be shipped from the US.

The cargoes are being offered for loading between June, 2019 and March, 2020 on a free-on-board (FOB) basis.

The tender was due to close on 29th April.

GTT receives two more orders

GTT has received orders from Daewoo Shipbuilding & Marine Engineering (DSME) and Hyundai Samho (HSHI).

The DSME order concerns the tank design of a new 173,400 cu m LNGC on behalf of an undisclosed European shipowner.

NO96 GW has been chosen for the design of the tanks and the delivery of the ship is planned for the first semester of 2021.

The HSHI order is for the tank design of a 174,000 cu m LNGC on behalf of Nippon Yusen Kaisha (NYK).

GTT's Mark III Flex membrane containment system was selected and this vessel's delivery is scheduled for the end of 2022. ■

Johor signs LNG service agreement with Petronas

Johor Port Berhad, a member of MMC Group, has signed a marine services agreement with PETRONAS LNG Ltd (PLL).

This agreement is aimed at providing marine services and an attractive tariff for gas carriers that receive gassing up and cooling down (GUCD) services at PLL's regasification terminal Pengerang (RGTP).

The GUCD is a specialist service to bring the LNGCs on board storage tanks to a natural environment and cooling it down to cryogenic temperature (-160 deg C).

This is a requirement for LNGCs to ensure safe loading of the next LNG cargo.

This move is hoped to encourage more vessel operators and owners to use the service at

Pengerang terminal, taking advantage of its strategic location and close proximity to shipyards in Malaysia and Singapore.

Johor Port currently provides a range of marine services for all types of vessels, including tugs and pilotage, berthing and unberthing, shifting, and others.

"Johor Port has well-trained and experienced pilots to handle all types of vessels, and well equipped with supporting resources like tug boats, mooring boats and mooring gangs that are at par with other developed ports in the region," claimed Shahrull Allam Shah Abdul Halim, Johor Port CEO.



Johor is offering gassing up and cooling down services to the LNGC sector

Babcock introduces ethane boil off gas technology

Babcock International has added the patent pending ecoETHN, an ethane boil off gas (BOG) reliquefaction technology, to its portfolio.

Using Babcock's existing technologies of the patented Super-Cooler and VentGasCooler (VGC), ecoETHN integrates the reliquefaction system with the fuel gas supply system, enabling reliquefaction of methane-rich BOG that can be used as fuel for main engines and auxiliary power generators.

ecoETHN is designed to handle ethane cargoes with high methane content and also effectively handles methane enrichment in BOG more efficiently than conventional reliquefaction solutions. It is a cost effective solution that minimises both capital and operational expenditure through the unique combination of reliquefaction and a fuel delivery system, the company claimed.

Neale Campbell, Babcock LGE managing director, said: "ecoETHN is a breakthrough addition to our portfolio of gas handling technologies. We continue to challenge ourselves and develop solutions

that we believe will meet the current and future needs of our customers while providing environmental and commercial benefits within the gas handling market.

"A key advantage of ecoETHN is that it allows methane content up to 2.0 mol% in the liquid phase to be transported for the next generation of VLEC/ULEC for typical ethane cargoes out of the US.

"Innovation is at the heart of our business and ecoETHN is already attracting significant interest from a number of global shipowners and shipyards. We are excited by the unique benefits that this technology will deliver for all stakeholders across the ethane value chain," he said.

On a typical deep-sea voyage, ecoETHN, when integrated with a ship's main engine and power generation systems, needs only one reliquefaction system, thus giving CAPEX and OPEX benefits, the company said.

NEWS NUDGE

GAC expands in Ras Laffan

GAC Qatar has opened an office at Ras Laffan.

Previously, GAC handled operations at Ras Laffan in an OPA (Owners' Protecting Agency) capacity and, from May, 2017, with a team based there to provide ship agency and support services.

GAC Qatar General Manager Daniel Nordberg said the decision to set up a fully-fledged office there was in direct response to growing activity and demand for services at the port.

In 2018, the number of port calls handled by GAC Qatar increased about 70% from the previous year. Much of that growth was related to Ras Laffan.

"LNG is a key driver for growth in Qatar, with exports forecast to increase further by about 40%. We have what it takes to provide the logistics and shipping support for that sector, and we are keen to play our part to support Qatar Vision 2030, both in Ras Laffan and throughout the country," Nordberg said.

LNGC is 6,000th Neopanamax to transit Panama

An LNGC recently became the 6,000th Neopanamax vessel to transit the expanded canal.

The 165,000 cu m LNGC 'Energy Liberty' completed the milestone transit sailing southbound from the Atlantic to the Pacific Ocean.

"Once again, we are proud to celebrate this achievement alongside our world-class workforce and LNG industry partners, who have swiftly adopted the waterway since the inauguration of the expanded canal less than three years ago," said Panama Canal Administrator (ACP) Jorge Quijano. "We look forward to continuing to exceed expectations for our customers, while offering the same reliable service, flexibility and opportunity as always."

'Energy Liberty' was carrying a cargo from the US Cove Point Terminal in Maryland, heading for Japan. LNGCs make up 11% of the total transits thus far, ACP said.

LNG connection system reduces transfer time and increases safety

Signum Technology subsidiary, KLAU LNG, has unveiled a new element to its hose transfer system - CryoCL.

CryoCL can deliver up to 50 times faster connection than the traditional nut and bolt method and is already proving to be effective in

commercial operations with the first FSRU at the Moheshkhali FLNG terminal, commissioned in August, 2018.

The fast connection advantages of the CryoCL are particularly valuable given the weather conditions that can be particularly chal-

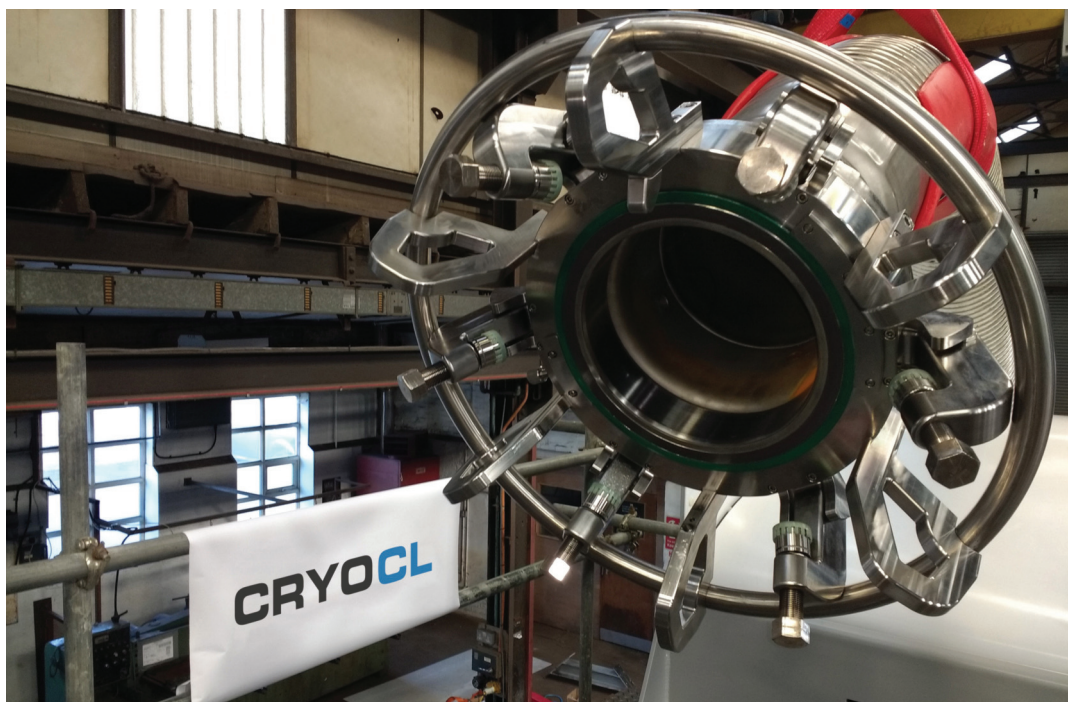
lenging in that part of the world, the company claimed.

Operational efficiencies are also exponentially improved by using multiple lines.

Faster connection and disconnection reduces exposure time for crew on deck, which can be a particular problem in extreme hot or cold environments. This simpler method of connection also means operators are less exposed to the risk of hand injuries.

"This is another example of Signum driving technology forward with new product development investment focused on delivering solutions and real benefits to operators both in terms of efficiency and safety," claimed Signum Technology Sales and Compliance Director, Jeff Vile.

The CryoCL is part of the 10 inch LNG hose transfer system supplied by KLAU LNG for the Moheshkhali FLNG terminal. ■



KLAU LNG has introduced a new element to its cryoCL units

Alfa Laval introduces new heat exchanger

Alfa Laval has introduced the DuroShell plate-and-shell heat exchanger.

This piece of equipment has been optimised for use as an LNG vaporiser in fuel gas applications to provide higher thermal efficiency than conventional plate-and-shell designs, as well as increased fatigue resistance.

Due to new research into glycol freezing, it can now be used in more compact and cost-effective installations.

"The continued rise in the number of vessels sailing with LNG is one of the most significant

trends in today's marine industry," said Jonny Hult, Alfa Laval's Head of Marine Heat Transfer Equipment. "With more and more ships relying on LNG as fuel, we are seeing greater demand for vaporiser technology that can dependably resist freezing and the fatigue caused by pressure and temperature. DuroShell is exceptional in this regard."

With a 100% stainless steel design, it can handle LNG entry temperatures that approach

-170 deg C or lower. Alfa Laval has also performed an extensive laboratory freeze testing to gain knowledge that will lead to lower capital and operational costs, the company said.

"Extreme low temperatures are not an issue for DuroShell, but a glycol mix with a freezing point of around -50 deg C has the potential to freeze when it meets plate surfaces as cold as -90 deg C," Hult explained. "Solving this problem with a higher glycol flow is a very expensive solution for our customers, so Alfa Laval has worked with SINTEF Energy Research to find the correlation of flows on both sides and thereby avoid freezing of fluid on the hot side."

Hult claimed that this will allow



Alfa Laval's Jonny Hult

shipbuilders to use a more compact plate-and-shell design with smaller pumps and pipes, which, in turn, will mean CAPEX and OPEX savings for shipowners. ■

“**The continued rise in the number of vessels sailing with LNG is one of the most significant trends in today's marine industry**”

- Jonny Hult, Head of Marine Heat Transfer Equipment, Alfa Laval

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WORLD LNG CARRIER ORDERBOOK

Yard	Containment System	Capacity	Propulsion	Delivery Date	Ordered	Primary Owner
JMU	SPB	165000	TFDE	Apr-19	Feb-14	MOL
JMU	SPB	165000	TFDE	Jul-19	Feb-14	MOL
JMU	SPB	165000	TFDE	Apr-19	Feb-14	NYK
DSME	GT NO 96	173400	MEGI	May-19	Jun-14	Maran Gas Maritime
DSME	GT NO 96	172000	TFDE - Azipod	Jul-19	Jul-14	Teekay LNG
DSME	GT NO 96	172000	TFDE - Azipod	Aug-19	Jul-14	Teekay LNG
DSME	GT NO 96	172000	TFDE - Azipod	Oct-19	Jul-14	Teekay LNG
DSME	GT NO 96	172000	TFDE - Azipod	Nov-19	Jul-14	Teekay LNG
DSME	GT NO 96	172410	TFDE - Azipod	Sep-19	Jul-14	MOL
Kawasaki	Moss	155000	TFDE	Dec-19	Sep-14	MOL
DSME	GT NO 96	173400	MEGI	Apr-19	Nov-14	BP
Mitsubishi H.I.	Moss	177000	STaGE	Sep-19	Jan-15	MOL
DSME	GT NO 96	173400	MEGI	Sept-19	Sep-15	BWGas
Kawasaki	Moss	177000	STRH	Jul-19	Sep-15	MOL
Mitsubishi H.I.	Moss	165000	STaGE	May-19	Nov-15	Mitsubishi
Mitsubishi H.I.	Moss	180000	STaGE	Jun-19	Nov-15	NYK
Mitsubishi H.I.	Moss	180000	STaGE	Feb-19	Nov-15	NYK
Hyundai Heavy	GTT Mark III Flex	180000	XDF	Apr-19	May-16	SK Shipping
Hyundai Heavy	GTT Mark III Flex	180000	XDF	May-19	May-16	SK Shipping
DSME	GT NO 96	173400	MEGI	Oct-19	Jun-16	Maran Gas Maritime
DSME	GT NO 96	173400	MEGI	Nov-19	Jun-16	Maran Gas Maritime
DSME	GT NO 96	173400	MEGI	Apr-20	Dec-16	Maran Gas Maritime
Hyundai Heavy	GTT Mark III Flex	180000	MEGI	May-19	Mar-17	Knutsen
DSME	GT NO 96	173400	MEGI	Jun-19	Mar-17	Flex LNG
DSME	GT NO 96	173400	MEGI	Aug-19	Mar-17	Flex LNG
Hyundai Heavy	GTT Mark III Flex	180000	MEGI	Jun-19	May-17	Knutsen
Hudong-Zhonghua	GT NO 96	174000	MEGI	Dec-19	Jul-17	MOL
Hudong-Zhonghua	GT NO 96	174000	MEGI	Mar-20	Jul-17	MOL
Hudong-Zhonghua	GT NO 96	174000	MEGI	Jul-20	Jul-17	MOL
Hudong-Zhonghua	GT NO 96	174000	MEGI	Oct-20	Jul-17	MOL
Samsung	GTT Mark III Flex	180000	XDF	Jun-19	Dec-17	GasLog
DSME	GT NO 96	173400	MEGI	May-20	Dec-17	Maran Gas Maritime
Hyundai Heavy	GTT Mark III Flex	174000	XDF	Mar-20	Jan-18	NYK
Hyundai Heavy	GTT Mark III Flex	174000	XDF	Jan-20	Jan-18	Cardiff Marine
Hyundai Heavy	GTT Mark III Flex	174000	XDF	Feb-20	Jan-18	Sovcomflot
DSME	GT NO 96	173400	MEGI	Dec-19	Feb-18	BWGas
DSME	GT NO 96	173400	MEGI	Jun-20	Feb-18	BWGas
Hyundai Heavy	GTT Mark III Flex	174000	XDF	Mar-20	Feb-18	Cardiff Marine
Hyundai Heavy	GTT Mark III Flex	174000	XDF	Apr-20	Feb-18	Cardiff Marine
DSME	GT NO 96	173400	MEGI	Aug-20	Feb-18	John Fredriksen
DSME	GT NO 96	173400	MEGI	Sep-20	Feb-18	John Fredriksen
Hyundai Heavy	GTT Mark III Flex	174000	XDF	May-20	Mar-18	Flex LNG
Hyundai Heavy	GTT Mark III Flex	174000	XDF	Jul-20	Mar-18	Flex LNG
Samsung	GTT Mark III Flex	180000	XDF	Apr-20	Mar-18	GasLog

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 = 4th April 2019

Yard	Containment System	Capacity	Propulsion	Delivery Date	Ordered	Primary Owner
Samsung	GTT Mark III Flex	174000	XDF	Mar-20	Mar-18	Cardiff Marine
DSME	GT NO 96	173400	MEGI	Dec-20	Mar-18	Minerva Marine
DSME	GT NO 96	173400	MEGI	Jan-21	Mar-18	Minerva Marine
Hyundai Heavy	GTT Mark III Flex	180000	MEGI	Jun-20	Mar-18	Knutsen
DSME	GT NO 96	173400	MEGI	Aug-20	Mar-18	Alpha Gas
DSME	GT NO 96	173400	MEGI	Dec-20	Mar-18	Alpha Gas
Samsung	GTT Mark III Flex	180000	XDF	Sep-20	May-18	GasLog
DSME	GT NO 96	173400	MEGI	Oct-20	Jun-18	Maran Gas Maritime
DSME	GT NO 96	173400	TFDE	Apr-21	Jun-18	Maran Gas Maritime
DSME	GT NO 96	173400	MEGI	Apr-21	Jun-18	Alpha Gas
Hyundai Heavy	GTT Mark III Flex	174000	XDF	Sep-20	Jun-18	Thenamaris
Hyundai Heavy	GTT Mark III Flex	174000		Feb-21	Jun-18	Flex LNG
Hyundai Heavy	GTT Mark III Flex	174000		May-21	Jun-18	Flex LNG
Hyundai Heavy	GTT Mark III Flex	174000		Oct-20	Jul-18	Capital Gas
Hyundai Heavy	GTT Mark III Flex	174000		Nov-20	Jul-18	Capital Gas
Hyundai Heavy	GTT Mark III Flex	174000		Mar-21	Jul-18	Capital Gas
Hyundai Heavy	GTT Mark III Flex	174000		Jun-21	Jul-18	Capital Gas
DSME	GT NO 96	173400	MEGI	Nov-20	Jul-18	John Fredriksen
Samsung	GTT Mark III Flex	180000	XDF	Dec-20	Aug-18	Celsius Shipping
Samsung	GTT Mark III Flex	180000	XDF	Mar-21	Aug-18	Celsius Shipping
Hyundai Heavy	GTT Mark III Flex	174000	XDF	Sep-20	Aug-18	Cardiff Marine
Samsung	GTT Mark III Flex	174000	XDF	Oct-20	Aug-18	GasLog
Samsung	GTT Mark III Flex	174000	XDF	Dec-20	Aug-18	GasLog
Hyundai Heavy	GTT Mark III Flex	174000	XDF	Feb-21	Sep-18	Cardiff Marine
Hyundai Heavy	GTT Mark III Flex	174000	XDF	Feb-21	Sep-18	Thenamaris
Samsung	GTT Mark III Flex	174000	XDF	Mar-21	Sep-18	NYK
Samsung	GTT Mark III Flex	174000	XDF	Jan-21	Oct-18	Minerva Marine
Samsung	GTT Mark III Flex	174000	XDF	Sep-21	Oct-18	Minerva Marine
Samsung	GTT Mark III Flex	174000	XDF	Feb-21	Nov-18	Cardiff Marine
Samsung	GTT Mark III Flex	174000	XDF	Jan-21	Nov-18	Cardiff Marine
Hyundai Heavy	GTT Mark III Flex	174000	XDF	Mar-21	Nov-18	Cardiff Marine
Hyundai Heavy	GTT Mark III Flex	174000	XDF	Apr-21	Nov-18	Cardiff Marine
Hyundai Heavy	GTT Mark III Flex	174000	XDF	Feb-21	Nov-18	Latsco Shipping
Hyundai Heavy	GTT Mark III Flex	174000	XDF	Mar-21	Nov-18	Latsco Shipping
Samsung	GTT Mark III Flex	174000	XDF	Aug-21	Dec-18	NYK
Samsung	GTT Mark III Flex	174000	XDF	Nov-21	Dec-18	NYK
DSME	GT NO 96	174000	MEGI	Feb-21	Dec-18	BWGas
DSME	GT NO 96	174000	MEGI	Jun-21	Dec-18	BWGas
DSME	GT NO 96	173400	MEGI	Jun-21	Dec-18	Maran Gas Maritime
Hyundai Heavy	GTT Mark III Flex	174000	XDF	Nov-20	Dec-18	NYK
Hyundai Heavy	GTT Mark III Flex	174000	XDF	Mar-21	Dec-18	NYK
Hyundai Heavy	GTT Mark III Flex	174000	XDF	Jun-21	Dec-18	NYK
DSME	GT NO 96	180000	MEGI	Dec-20	Dec-18	MOL
DSME	GT NO 96	173400	MEGI	Jun-21	Dec-18	MOL
Hyundai Heavy	GTT Mark III Flex	174000	XDF	Sep-20	Dec-18	Sovcomflot

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 = 4th April 2019

Yard	Containment System	Capacity	Propulsion	Delivery Date	Ordered	Primary Owner
Hyundai Heavy	GTT Mark III Flex	174000	XDF	Feb-21	Dec-18	Sovcomflot
Samsung	GTT Mark III Flex	180000	XDF	Jun-21	Dec-18	GasLog
Samsung	GTT Mark III Flex	180000	XDF	Aug-21	Dec-18	GasLog
Samsung	GTT Mark III Flex	174000	XDF	Mar-21	Dec-18	Cardiff Marine
DSME	GT NO 96	174000	MEGI	Jun-21	Dec-18	Alpha Gas
Samsung	GTT Mark III Flex	174000	XDF	Mar-21	Dec-18	Navigare
Samsung	GTT Mark III Flex	180000	XDF	Jun-21	Feb-19	Celsius Shipping
Samsung	GTT Mark III Flex	180000	XDF	Sep-21	Feb-19	Celsius Shipping
Hudong-Zhonghua	GT NO 96	178000	XDF	Sep-21	Feb-19	CSSC
Hudong-Zhonghua	GT NO 96	178000	XDF	Feb-22	Feb-19	CSSC
DSME	GTT Mark III Flex	174000	MEGI	May-21		Nakilat
Samsung		174000		Sep-22		Sinokor
Samsung		174000		Sep-22		Sinokor
Samsung		174000		Sep-22		Sinokor
Samsung		174000		Sep-22		Sinokor
DSME	GTT Mark III Flex	173400	XDF	Aug-21		Nakilat
DSME	GTT Mark III Flex	173400	XDF	Oct-21		Nakilat
Hyundai Heavy	GTT Mark III Flex	174000	XDF	Jun-21		Capital Gas
Samsung		174000		Mar-22		Nisshin Shipping

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 = 4th April 2019



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WORLD SMALL SCALE LNG FLEET*

Built	Name	CBM	Cargo Type	Trading area	Trading in LNG?	Ship Owner / Operator
1974	Seagas	187	LNG	Sweden	Yes	AGA
1988	Kayoh Maru	1,517	LNG	Japan	Yes	Daiichi
1993	Aman Bintulu	18,928	LNG	Malaysia - Japan	Yes	Perbadanan/NYK
1996	Surya Aki	19,475	LNG	Indonesia - Japan	Yes	MCGC
1997	Aman Sendai	18,928	LNG	Malaysia - Japan	Yes	Perbadanan/NYK
1998	Aman Hakata	18,800	LNG	Malaysia - Japan	Yes	Perbadanan/NYK
2000	Triputra	23,096	LNG	Indonesia - Japan	Yes	MCGC
2003	Pioneer Knutsen	1,100	LNG	Norway	Yes	Knutsen
2003	Shinju Maru No.1	2,540	LNG	Japan	Yes	Shinwa
2005	North Pioneer	2,500	LNG	Japan	Yes	Japan Liquid Gas
2007	Sun Arrows	19,531	LNG	Malaysia - Russia - Japan	Yes	Mitsui
2008	Kakurei Maru	2,536	LNG	Japan	Yes	Hogaki Zosen
2008	Shinju Maru No.2	2,540	LNG	Japan	Yes	Shinwa
2009	Coral Methane	7,551	LNG/LPG/Ethylene	Northwest Europe/Baltics	Yes, sometimes	Anthony Veder
2010	Norgas Creation	10,000	LNG/LPG/Ethylene	Worldwide	No	Norgas Carriers
2010	Norgas Innovation	10,000	LNG/LPG/Ethylene	Worldwide	No	Norgas Carriers
2011	Akebono Maru	3,556	LNG	Japan	Yes	Chuo Kaiun
2011	Norgas Conception	10,000	LNG/LPG/Ethylene	Worldwide	No	Norgas Carriers
2011	Norgas Invention	10,000	LNG/LPG/Ethylene	Worldwide	No	Norgas Carriers
2011	Vision Spirit	12,000	LNG/LPG/Ethylene	Worldwide	No	Teekay
2011	Unikum Spirit	12,000	LNG/LPG/Ethylene	Worldwide	No	Teekay
2012	Coral Energy	15,600	LNG	Northwest Europe/Baltics	Yes	Anthony Veder
2013	JX Energy TBN	2,500	LNG	Japan	Yes	JX Energy
2013	Kakuyu Maru	2,500	LNG	Japan	Yes	Tsurumi Sunmarine
2013	Coral Anthelia	6,500	LNG/Ethylene			Anthony Veder
2014	LNG-Oil combi**	2,000	LNG	Germany	Yes	Veka
2014	Short Sea LNG Tanker **	4,000	LNG	Germany	Yes	Veka
2015	LNG Inland bunker**	800	LNG	Germany	Yes	Veka
2015	LNG bunker barge 1†	2,250	LNG	China	Yes	Anhui Huaqiang Natural Gas
2015	LNG bunker barge 2†	2,250	LNG	China	Yes	Anhui Huaqiang Natural Gas
2015	LNG bunker barge 3†	2,250	LNG	China	Yes	Anhui Huaqiang Natural Gas
2015	LNG Barge TBN	3,000	LNG	US Coast	Yes	LNG America
2015	10 small carriers TBN**	5,000	LNG			Bimantara Group
2015	Jahre TBN**	6,200	LNG	Norway	Yes	Donsotank/Jahre Marine
2015	Norgas TBN**	17,000	LNG/LPG/Ethylene	Worldwide		Norgas Carriers
2015	Norgas TBN**	17,000	LNG/LPG/Ethylene	Worldwide		Norgas Carriers
2015	JS Ineos Ingenuity	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2015	JS Ineos Insight	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2015	JS Ineos Intrepid	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2015	TBN 1	27,500	LNG	China?		Danyang?
2015	TBN 2	27,500	LNG	China?		Danyang?
2015	TBN 3	27,500	LNG	China?		Danyang?
2015	PetroChina TBN	30,000	LNG	China		PetroChina
2016	Clean Jacksonville	2,200	LNG	US Coast	Yes	CME
2016	LNG Prime	2,250	LNG	Northwest Europe	Yes	Veka Deen LNG
2016	JS Ineos Indepence	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2016	JS Ineos Innovation	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2016	JS Ineos Inspiration	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2016	Hai Yang Shi You 301	30,000	LNG	Bali FSU	Yes	CETS (CNOOC)
2016	Navigator Aurora	35,000	Ethane/Ethylene	Markus Hood - Stenungsund	Ethane, for Borealis	Navigator
2016	Gaschem Beluga	36,000	Ethane/Ethylene	US - Teeside	Ethane, for Sabic	Gaschem Services
2016	Gaschem Orca	36,000	Ethane/Ethylene	US - Teeside	Ethane, for Sabic	Gaschem Services

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

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

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

** = project shelved † = Data to be verified Data last updated = 4th March 2019

Built	Name	CBM	Cargo Type	Trading area	Trading in LNG?	Ship Owner / Operator
2016	Ocean Yield TBN**	36,000	Ethane/Ethylene	US - Teeside	Ethane, for Sabic	Gaschem Services
2017	Oizmendi	600	LNG	Bilbao	Yes	Itsas Gas
2017	CME TBN†	2,200	LNG	US Coast	Yes	CME
2017	CME TBN†	2,200	LNG	US Coast	Yes	CME
2017	ENGIE Zeebrugge	5,000	LNG	Northwest Europe	Yes	NYK
2017	Coralius	5,800	LNG	Northwest Europe/Baltics	Yes, for Skangas	Anthony Veder
2017	Cardissa	6,500	LNG	Northwest Europe	Yes	Shell
2017	LNG-Gorskaya TBN	7,300	LNG	Russia	Yes	LNG-Gorskaya
2017	LNG-Gorskaya TBN	7,300	LNG	Russia	Yes	LNG-Gorskaya
2017	LNG-Gorskaya TBN	7,300	LNG	Russia	Yes	LNG-Gorskaya
2017	Coral EnergyICE	18,000	LNG	Northwest Europe/Baltics	Yes	Anthony Veder
2017	JS Ineos Invention	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2017	JS Ineos Intuition	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2017	Yuan He 1	30,000	LNG	China	Yes	CSR
2017	Navigator Eclipse	35,000	Ethane/Ethylene	US	Ethane	Navigator
2017	Navigator Nova	35,000	Ethane/Ethylene	US	Ethane	Navigator
2017	Navigator Prominence	35,000	Ethane/Ethylene	US	Ethane	Navigator
2018	HUA XIANG 8	13,720	LNG	China	Yes	Zhejiang Huaxiang
2018	CME TBN†	2,200	LNG	US Coast	Yes	CME
2018	Shell Bunker Barge TBN 4	3,000	LNG	Northwest Europe	Yes	Shell
2018	Shell Bunker Barge TBN 2	6,500	LNG	Northwest Europe	Yes	Shell
2018	Shell Bunker Barge TBN 3	6,500	LNG	Northwest Europe	Yes	Shell
2018	Kairos	7,500	LNG	Baltic	Yes	Bernhard Schulte
2018	Qi Yuan	28,000	LNG	China	Yes	Dalian Inteh Group
2018	Evergas TBN	32,000	Ethane/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2018	Evergas TBN	32,000	Ethane/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2018	Evergas TBN	32,000	Ethane/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2018	Evergas TBN	32,000	Ethane/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2018	Bunker Breeze	0	LNG	Barcelona	Yes	Suardiaz Energy Shipping
2019	KLine TBN	7,500	LNG	Korea	Yes	Korea Line
2019	KLine TBN	7,500	LNG	Korea	Yes	Korea Line
2019	Stolt TBN	7,500	LNG	Mediterranean	Yes	Stolt-Nielsen Gas
2019	Stolt TBN	7,500	LNG	Mediterranean	Yes	Stolt-Nielsen Gas
2020	Shell Bunker Barge	4,000	LNG	US Coast	Yes	Q-LNG Transport/Harvey Gulf
2020	Stolt TBN (option) **	7,500	LNG		Yes	Stolt-Nielsen Gas
2020	Stolt TBN (option)	7,500	LNG		Yes	Stolt-Nielsen Gas
2020	Total TBN	18,600	LNG	NWE	Yes	MOL
2020	FuelLNG TBN	7,500	LNG	Singapore	Yes	FuelLNG
2020	CLS TBN	3,500	LNG	Japan	Yes	CLS
2020	Eesti Gaas TBN	6,000	LNG	NWE	Yes	Eesti Gaas
2020	ENN TBN	8,500	LNG	China	Yes	ENN
2021	Stolt TBN (option)	7,500	LNG		Yes	Stolt-Nielsen Gas
2021	Knutsen TBN	30,000	LNG	Mediterranean	Yes	Knutsen OAS
2021	Gazprom Neft TBN	5,800	LNG	Russia	Yes	Gazprom Neft
2021	PE TBN	12,000	LNG	Singapore	Yes	MOL
2021	JMU TBN	2,500	LNG	Japan	Yes	JMU
2022	Stolt TBN	20,000	LNG	Worldwide	Yes	Stolt-Nielsen Gas
2022	Stolt TBN	20,000	LNG	Worldwide	Yes	Stolt-Nielsen Gas
2024	Stolt TBN (option)	20,000	LNG	Worldwide	Yes	Stolt-Nielsen Gas
2024	Stolt TBN (option)	20,000	LNG	Worldwide	Yes	Stolt-Nielsen Gas
2026	Stolt TBN (option)	20,000	LNG	Worldwide	Yes	Stolt-Nielsen Gas
2026	Stolt TBN (option)	20,000	LNG	Worldwide	Yes	Stolt-Nielsen Gas

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

*Includes multi-gas, ethylene and LNG bunker ships with 40,000 cubic metres LNG cargo capacity or less
TBN = To Be Nominated indicates ships are still at construction/planning stage

** = project shelved † = Data to be verified Data last updated = 4th March 2019