

LNG Shipping News

AN LNG JOURNAL TITLE ON LNG CARRIERS

4 February 2021

FSRU usage to double

FSRU's share of the LNG import market is projected to double to 20% by 2030, according to Poten & Partners Majed Limam.

For example, he said that investing in FSRUs makes sense in the Mediterranean countries, if they are considering replacing diesel as an energy source.

However, he conceded that they were difficult projects to put together.

For countries new to the game, a lot of technical work will be needed - the economics needed to be studied, the siting of the project also needs to be taken into account with the geophysical and metocean environments studied. Local regulations could also cause problems by way of permitting.

In addition, the negotiations for an FSRU and the sales and purchase agreements (SPAs) will take time, as governments might not be familiar with the commercial and technical nuances of FSRU operations.

He listed the main criteria that need to be considered before opting for an FSRU, including the challenges particularly at the pre-FID stage (pre-feasibility), followed by a study of LNG feasibility, the unit's engineering and design moving on to project procurement, construction and finally operations.

Limam urged those considering the use of FSRUs for LNG imports to concentrate on the project's drivers and not just look at a line on a graph.

FID prospects

As for the possibility of FIDs taken on projects soon, he said that 2021 was going to be a year of transition. For those taken this year or next, operators will not see the benefit until 2025-2026, due to the length of time it takes to get a project fully online.

Project development movements could be seen during the second half of this year and in 2022, increasing to 2030, but projects will see competition coming from other energy sources in the long term.

Finally, he said that what is keeping LNG project developers awake at night was the global economic trends in a post-pandemic world, ie the timing and the magnitude of the recovery and the amount of energy growth to be seen in developing countries.

Other concerns included infrastructure bottlenecks, future oil

price levels, the commercial structure of LNG projects and the long term market requirements versus the need for flexibility.

Returning to FIDS, Baker Hughes expected around four this year following last year's pandemic-induced collapse.

The group's unit that caters for LNG contracts was the only one of its four segments that boosted fourth-quarter sales from a year earlier, the company said in an earnings statement.

"By 2030, we still need to have capacity of approximately 650 to 700 mill tonnes of LNG in place," CEO, Lorenzo Simonelli told analysts and investors during a conference call. "You're looking at 50 to 100 mill tonnes FIDing over the course of the next three to four years."

Only one project reached a FID last year.

However, the demand picture changed this winter when cold weather in Europe and North Asia sent spot prices soaring, raising the prospect of revived commercial talks with LNG developers worldwide, the company explained. ■

SHIPPING NEWS AGENDA

MARKETING

Damietta to restart 2

No gas rebound 3

BUSINESS

Fourth export facility 6



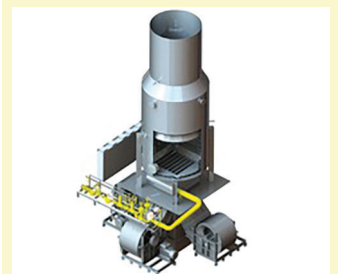
Bahia lease rebid 6

FLNG agreements signed 7

Galveston LNG cancelled 7

TECHNOLOGY

Wärtsilä to supply six LNGCs 8



SAACKE unveils new GCU 9

LNG ORDERBOOK

LNG carrier orderbook 11

LNG small scale fleet 14



More FSRUs could be on the horizon

Damietta to come back online

Egypt is to restart a second LNG production plant.

Damietta has been idle for eight years and will now reopen by the end of February, Oil Minister Tarek El-Molla said in an interview with Dubai-based consultancy Gulf Intelligence.

It will process about 4.5 mill tonnes of LNG a year raising Egypt's capacity to 12.5 mill tonnes, he said, reported Bloomberg.

Damietta will join Idku, whose exports have picked up after falling last year amid the coron-

avirus pandemic.

While Egypt only accounted for about 1% of global LNG supplies in 2019, it will become one of the top 10 exporters if it reaches full capacity, according to data compiled by Bloomberg.

"In 2020, the prices were very low and we were not able to export except for a few cargoes," El-Molla said. "But starting from October, 2020 until now, we have already booked all our volumes to be exported from the Idku plant

up till the end of March."

Egypt plans to use its geographic position to become a major supplier to Europe. Egypt will ship gas from its domestic Zohr field, as well as some imported from Israel.

Damietta was idled in November, 2012 over a gas supply dispute between the Egyptian Government and Union Fenosa Gas, a joint venture between Spain's Naturgy Energy Group and Italy's Eni. ■

Consultancy wraps up Tema LNG terminal task

AqualisBraemar's ports & harbour division has completed its two-year involvement in the development of Sub-Saharan Africa's first floating LNG import terminal.

The LNG terminal, located in Tema, Ghana, recently received an FRU that will soon offer services to LNGCs.

Tema LNG Terminal Company, (TLTC), established by Helios Investment Partners in November, 2017 to develop, construct and operate the facility, recently took delivery of the FRU, built by Jiangnan Shipbuilding.

Once operational, the unit will allow the Tema LNG facility to re-

ceive, re-gasify, store and deliver roughly 1.7 mill tonnes of LNG a year - equivalent to 30% of Ghana's general capacity.

AqualisBraemar was involved in marine design consultancy support throughout the project, including various mooring designs for FRU, FSU, LNGCs and ship manoeuvring simulations. The company worked for Gasfin Development and also worked alongside civil consultancy firm AECOM.

"We are proud and happy to be involved in the development of this ground breaking, cost-effective LNG solution, which will provide energy to millions of Ghanaians. We are very thankful to Gasfin Development and AECOM for enabling us to share this exciting journey with them," Sanjeev Reddy, technical manager, ports & harbours said.

Associated marine services included vessel manoeuvring simulations, navigation risk assessments, vessel movement and route simulations, anchor drag/dropped object modelling, grounding and allision risk analyses, dynamic mooring analyses, as well as port capacity and utilisation studies to reduce operating costs in both port and offshore environments.

In addition, in a separate assignment, AqualisBraemar subsidiary company LOC provided marine warranty services for Tema. ■



Consultancy work has concluded on the Tema LNG project

Pakistan takes advantage of spot prices

Pakistan State Oil (PSO) has invited bids for an LNG cargo to be delivered on 15th -16th April.

This follows Pakistan LNG Limited's (PLL) bids for three LNG cargoes of 140,000 cu m each for April.

PLL also said that it had saved about \$30 mill by buying three spot cargoes for March.

"The shorter lead time tender has been awarded saving an estimated \$30 mill for three LNG cargoes, compared to earlier," it said.

The gas company explained that it had issued a tender for three spot cargoes for March on 16th December, 2020 and opened the bids on 15th January, this year with bid opening to delivery ranging from 53 to 66 days.

Multiple bids were received for all the cargoes but the company decided not to award the tender considering the rapidly changing supply and demand position.

On 21st January, PLL issued an urgent tender for similar delivery windows with an average of 44 to 57 days from bid opening to delivery, and awarded the shorter lead time tender saving \$30 mill for the three cargoes.

"As stated multiple times, this once again demonstrates that prices are determined by supply and demand, not by ordering early," PLL said. ■

LNG Shipping News

2 Prospect Road
St Albans AL1 2AX
United Kingdom
www.lngjournal.com
Tel: +44 (0)20 7253 2700

Publisher
Stuart Fryer

Editor

Ian Cochran
+44 (0)7748 144265
lancochran74@gmail.com

Ad sales enquiries

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

Subscriptions

Stephan Venter
Tel: +44 (0) 20 7253 2700
venter@lngjournal.com

Production

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

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Höegh ties up 10-year FSRU charter

Höegh LNG Holdings has finalised and signed all documentation needed for the 10-year charter of an FSRU to India's H-Energy.

The company has selected 'Höegh Giant' to fulfil the 10-year contract. Annual termination options could be available after the first five-year period.

Previously, a binding commitment had been announced in an Oslo Bors notice on 19th November, 2020.

'Höegh Giant' is currently completing a Naturgy charter, operating as an LNGC. Following the charter, she will sail directly to Keppel Shipyard for minor modifications, in addition to pre-completion of the vessel's five year class survey, originally scheduled for 2022, as this will improve efficiency and reduce costs, Höegh explained.

The FSRU is expected to be off

hire for about 40 days in the first quarter of this year before the start-up of the H-Energy contract in March.

'Höegh Giant' will be the first FSRU to operate in India and will deliver natural gas to the 56 km Jaigarh/Dabhol pipeline connecting the LNG import terminal to the national gas grid.

The unit will also deliver LNG for onshore distribution through LNG truck loading facilities, as well as reloading LNG onto small-scale LNGCs for downstream distribution or LNG bunker services.

H-Energy's FSRU terminal will allow coal consumption to be replaced by natural gas at a scale which reduces CO2 emissions by up to about 120 mill tonnes, NOx



Höegh LNG has tied up the charter of the 'Höegh Giant'

emissions by about 97% and SOx emissions by around 99% over the 10-year period.

Höegh President and CEO, Sveinung Støhle said: "We are delighted to have completed the agreements with H-Energy for the first FSRU LNG import terminal in India, in particular given the strong ESG profile of this project, which is in line with HLNG's vision to provide our customers with the infrastructure to access clean and

affordable energy.

"A roadmap with H-Energy also includes the joint development of the downstream small-scale LNG market in the region, using the FSRU as the terminal for storage and re-loading to smaller vessels. India is a high-growth market and we see clear potential for Höegh LNG to provide additional FSRUs and clean energy solutions to this market over the coming years," he said. ■

No gas demand rebound - IEA

Asian LNG demand spike last month on the back of freezing temperatures was not an indication of a major global demand rebound for the remainder of 2021, an International Energy Agency (IEA) official said.

IEA senior gas analyst Jean-Baptiste Dubreuil said the agency expected a small recovery in global gas demand this year after a decline in 2020, due in part to the coronavirus pandemic.

Asian LNG demand rose sharply in early January as temperatures plunged, prompting a rally in the JKM spot Asian LNG price to an all-time high of \$32.5 per MMBtu.

Dubreuil, speaking on a webinar hosted together with the Dutch Clingendael International Energy Programme and Italy's Istituto Affari Internazionali, said the demand and price spikes were a "short-term phenomenon."

"This short-term event does not herald a major demand rebound for 2021, both in terms of global gas and of LNG demand," he said.

In its first quarterly gas report published on 26th January, the IEA said global demand was expected to increase by 2.8% - or around 110 bill cu m - this year, just above the decline extent

witnessed last year and signalling a return to 2019 consumption levels.

Gas demand in 2020 fell by 2.5%, or by an estimated 100 bill cu m, to around 3.91 trill cu m - the largest ever recorded drop in gas consumption.

Demand this year is seen at 4.021 trill cu m.

Dubreuil warned, however, that the rate of demand growth remained uncertain due to ongoing concerns over the coronavirus pandemic.

"Drivers for growth remain fragile," he said. "Any prospect of a prolonged health crisis and delayed recovery will negatively impact this rebound to 2019 gas demand [levels]."

"Mature markets - which took around 80% of the impact last year of the demand decline - are likely to see a more gradual recovery and some of them may remain below their 2019 demand levels by the end of this year," he said.

Dubreuil said that the outlook remains strongly dependent on the rate of world economic recovery and the prospect of any potential slowing down or delayed recovery in 2021.

He added that the rebound so far in 2021 in residential and commercial demand would likely be a one-off.

"Beyond 2021 and this short-term recovery, we do not expect that much further growth globally for residential and commercial use, apart from small pockets especially in China and in south and southeast Asia," he said.

In the longer term, Dubreuil said the next five years would prove a "very challenging" environment for LNG buyers and sellers in terms of renewal of about one third of existing contracted volumes and rising liquefaction capacity.

As a result, he said that new buyers would be attracted to the LNG market. ■

NEWS NUDGE

WinGD in the record books

Since the first 12X92DF engine was built in 2019, Swiss-based engine designer WinGD has claimed it was the world's most powerful dual-fuel engine.

This claim has now been made official, as the engine series has been awarded the Guinness World Record for the most powerful Otto-cycle engine ever built.

In tests carried out at engine builder CSSC-MES Diesel (CSSC-CMD) and verified by Guinness World Records, for the official record title 'Most powerful marine internal combustion engine (Otto cycle) commercially available', the 2,140 tonne engine demonstrated a power of 63,840 kW at a speed of 80 rev/min.

The engines, fuelled from 18,600 cu m tanks, containing enough LNG to sail a complete Asia/Europe round trip, will propel nine CMA CGM 23,000 TEU containerships. ■

US March cargo cancellations to drop to zero

Few if any US LNG cancellations were expected for March, according to traders talking with Platts in the past couple of weeks.

This date is important as it represents the deadline to nominate March cargo cancellations at Cheniere's two liquefaction facilities, which account for about 50% of US LNG export capacity, the newswire explained.

Exports from other US-based facilities were expected to remain robust through to March.

"At the moment I'd say [US cancellations] are unlikely given the value of TTF," said a Europe-based trader. "[Those cargoes] are still well in the money."

Using January S&P Global Platts assessed shipping rates and the value of delivered markers for Asia and Europe, exports to both regions are comfortably above the opportunity cost of gas at major US hubs.

Based on pervading Atlantic day charter rates, the freight adjusted value of a March loading cargo was highest for delivery into the

Mediterranean market, though deliveries into Asia are still also profitable relative to the equivalent NYMEX Henry Hub futures contract.

The dynamics of relative profitability will, however, depend on the changing cost of shipping. The Platts-assessed Atlantic day charter rate is declining from record levels seen at the beginning of January, when they reached \$300,000 per day.

Market sources expected the

cost of spot shipping to continue to decline as the spike in spot Asian demand brought on by an unusually cold winter in Asia begins to slide.

Recent netback analysis undertaken by S&P Global Platts Analytics using forward curves for the JKM, TTF, HH and independent shipping forecasts, predicted US LNG exports to remain in the money by more than \$2 per MMBtu into the third quarter of 2021. ■



March is an important month for Cheniere

Maintenance to shut Australian trains

Woodside has warned that its LNG production is expected to fall this year.

This is due to the shutting of the North West Shelf LNG trains for maintenance throughout the year, the company said in its fourth quarter report last month.

Woodside gave a total 2021 production guidance of 90-95 mill barrels of oil equivalent, with LNG expected to make up 70-72 mill boe of the total, compared to last year's total production of 100.3 mill boe and LNG production of 75 mill boe, respectively.

The company also said its 16.9 mill tonnes per year nameplate North West Shelf (NWS) project will have planned turnarounds for about one month each on Trains 2 and 4. Train 4 is scheduled for the April/June quarter and Train 2 for the July/September period.

Woodside said NWS ran at 46,065 tonnes per day through the December quarter, which comes to 16.81 mill tonnes per year, a 6% year-on-year and quarter-on-quarter rise.

Production at the 4.9 mill tonnes

per year nameplate Pluto LNG was hit by a planned shutdown for the installation of a water handling module, which saw a daily rate of 13,110 tonnes, down 5% year-on-year and 10% quarter-on-quarter.

The 8.9 mill tonnes per year Wheatstone LNG facility also benefited from high reliability, as well as better utilisation of offshore capacity to post rates of 27,002 tonnes per day, up 4% year-on-year and 1% higher from July/September, Woodside said.

Some 30% of its LNG was sold on a spot basis last year. "We agreed our highest ever spot LNG price for delivery in the coming quarter, surpassing our previous record set in 2012," CEO, Peter Coleman, said.

Wheatstone below capacity

Also in Australia, Chevron is currently operating its Wheatstone LNG plant at below capacity as repairs are made to an inlet separator, a

senior company executive said.

"At Wheatstone, production is modestly below capacity while we repair an inlet separator," CFO Pierre Breber said during an earnings conference call last week. "We do not expect production impacts in the second quarter."

For the rest of this year, the plant is expected to be back up to full capacity until planned maintenance is due to start late in the third quarter and continue through the fourth quarter, CEO Mike Wirth said during the call.

Meanwhile, repairs on Train 1 at Gorgon is nearing completion, with the production unit expected to be back online in March, Breber said.

"After Train 1 is back online, Train 3 will be taken out of service for the propane vessel inspections, any repairs and the planned turnaround," he added.

Maintenance at Train 3 is expected in the second quarter, Wirth said. ■

Bangladesh to ramp up imports

Bangladesh aims to boost LNG imports by more than a third this year from 2020 levels.

Most of the incremental volumes were expected to be sourced from the spot market, a Petrobangla official told S&P Global Platts.

The country is seeking to import around 12.14 mill cu m of LNG in 88 LNG cargoes between January/December, 2021 - 64 from term dealers and 24 from the spot market, the source said.

Bangladesh imported 8.97 mill cu m in 2020 comprising 65 LNG cargoes of 138,000 cu m each, of which only one was sourced from the spot market, he added.

State-run Rupantarita Prakritik Gas Company Ltd (RPGCL), a wholly owned Petrobangla subsidiary, imported around 2.5 mill tonnes of LNG from Qatargas and 1.5 mill from Oman Trading International under term deals last year.

One cargo was sourced from the spot market and supplied by Vitol Asia in late September.

Several dual-fuel power plants in Bangladesh with a total electricity generation capacity of around 650 MW, which had been running on gasoil, have recently been converted to gas-fired, resulting in the need for increased LNG imports.

More gas-fired power plants are planned to be operational this year, the Petrobangla official said.

In addition, the country cleared the way for full utilisation of its two FSRUs with the completion of a natural gas transmission pipeline in 2020.

In India, Bharat Petroleum Corp is seeking two LNG cargoes for delivery in March.

The refiner is seeking one cargo for delivery into Dahej on 14th March and the other for Kochi on 18th-19th March, according to local sources.

The tender closed on 2nd February. ■

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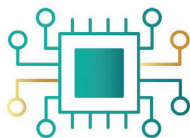
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Venture Global plans a fourth LNG export terminal

Two Venture Global subsidiary companies have asked for permission to commence a pre-filing process for a fourth LNG export terminal and associated pipeline.

In a regulatory filing, Venture Global CP2 LNG and Venture Global CP Express want to initiate the US Federal Energy Regulatory Commission (FERC) pre-filing review process proposed for the company's planned CP2 terminal.

According to FERC's website, the new export terminal would be located adjacent to Venture Global's Calcasieu Pass facility currently under construction. It has been designed to have a nameplate capacity of 20 mill tonnes per year and a peak capacity of 24 mill tonnes.

CP2 will be fitted with 18 trains with a capacity of around 1.1 mill tonnes each, four LNG storage tanks, two loading berths for deepsea LNGCs and a power plant, according to the filing.

Once the permits are in place,

CP2 will be built in two sections, each of 10 mill tonnes per annum nameplate capacity. Phase 1 will consist of nine trains, two tanks, two berths, a power plant and ancillary facilities. The pipeline would also be constructed as part of the first phase.

The second phase construction and timelines would depend on the market at the time, Venture Global said in the filing.

The company plans to start construction during the second quarter of 2023 with first gas some two years later and the operation of the first phase in mid-2026.

Venture Global is already building the Calcasieu Pass Project and has also received authorisation to build the Plaquemines LNG project.

Last spring, Venture Global also

started the early FERC review stage for the Delta LNG project, a possible 24 mill tonnes per year facility in Plaquemines, south of New Orleans.

Other projects

Meanwhile in other export terminal project news, Qatar Petroleum and ExxonMobil owned Golden Pass project has requested immediate FERC authorisation to start the work covered in the latest part of its implementation plan.

The National Oceanic and Atmospheric Administration (NOAA) has issued a notice stating that the deadline for issuing a decision on Jordan Cove's request that the US Secretary of Commerce override an objection by the Oregon Department of Land Conservation and Development (DLCD) to a con-

sistency certification for the proposed project has been extended by 15 days to 9th February.

Elsewhere, FERC has prepared an environmental assessment (EA) for the Port Arthur LNG expansion project, proposed by Port Arthur LNG Phase II and PALNG Common Facilities Company.

They request authorisation to expand the previously certificated Port Arthur Liquefaction Terminal in Jefferson County, Texas by siting, constructing, and operating additional LNG facilities to increase the terminal's capability to liquefy natural gas for export by 13.46 mill tonnes per annum.

This project would increase the terminal's total liquefaction capacity to 26.92 mill tonnes per annum. Comments must be received by 15th February. ■

Bahia terminal lease rebids requested

Petrobras has confirmed that the Bahia regasification LNG terminal bidding process started on 3rd August last year has been terminated.

No valid proposals were received and, as a result, the company published a notice with the aim of determining a deadline for companies to express interest in participating in a new bidding round for the leasing of the Bahia terminal and associated facilities.

Bidding will be restricted to pre-qualified companies, Petrobras said.

The terminal consists of an

island type pier with all the necessary facilities for mooring an FSRU directly to the pier and a supply ship on the unit's port side.

LNG transfer is made directly between FSRU and the supplier in a side-by-side configuration. The maximum regasification flow rate is 20 mill cu m per day. However, the FSRU is not part of the leasing process. ■



Petrobras has called for a rebidding process for the Bahia terminal lease

NEWS NUDGE

Wikborg Rein takes on LNGC expert

Law firm Wikborg Rein has expanded its marine casualty and emergency response team with the hire of new Admiralty Manager Matt Berry with effect from this month.

Berry, a former mariner and a qualified solicitor, joined from Ince where he specialised in maritime casualties and claims.

At Wikborg Rein, he will investigate and handle ship casualty cases, as well as working on, and helping expand, the firm's admiralty practice.

As well as extensive experience in casualty claims, Berry has specialist knowledge of LNG operations, including cargo operations, machinery and equipment, propulsion and use of cargo/boil-off for fuel, which enables him to provide advice, both practically and legally, on a variety of LNG-related matters, both wet and dry.



Wikborg Rein's new recruit Matt Berry

He has acted for the owners and insurers of a fully laden LNGC, which grounded as it was leaving Nigeria LNG's Bonny Island terminal.

This was the first case of its kind, resulting in several complex issues over salvage, and culminating in the first ship-to-ship LNG transfer from a grounded vessel. ■

Transborders signs FLNG agreements

Australian-based Transborders Energy has signed multi-party and multi-project FLNG solution framework agreements.

These agreements allow for the joint pursuing of the deployment of the company's FLNG solution on a range of stranded offshore gas resource projects.

They are claimed to be the first collaborative arrangement among large engineering procurement, construction & installation (EPCI) and O&M contractors, investors and LNG offtakers to collectively commercialise a series of discovered but stranded offshore

gas resource opportunities.

Among the companies signing up to the framework agreements were - Add Lucid (Add Energy Group); Kyushu Electric Power and Kyushu Electric Australia; Mitsui OSK Lines (MOL); Single Buoy Moorings (SBM Offshore); and Technip France (TechnipFMC).

Transborders said that each party had agreed the terms and conditions of key term sheets in relation to the FLNG and upstream

facilities EPCI, plus the gas offtake and liquefaction tolling arrangements that would apply on a range of stranded offshore gas resource opportunities.

Preferential rights

They also agreed to certain preferential rights granted to each party, such as those related to the investment in and offtake from each project.

Add Energy Group's CEO, Ole Rygg, said, "We are proud to be able to contribute our technology, drilling, completions, operational and maintenance expertise under this multi-party framework agreement as Transborders leads the way in commercialising stranded gas resources through FLNGs.

"This is an important project for Add Energy and the industry as we focus our efforts on unlocking opportunities that reduce our carbon footprint," he said.

Arnaud Pieton, President Technip Energies, added: "This FLNG framework agreement is a new

step for the FLNG industry and for our energy transition journey to a low-carbon society.

"Under this framework, TechnipFMC would further strengthen its FLNG leadership and leverage the expertise and learnings from its other three FLNG projects in operation or under construction," he said.

Transborders Energy's Chairman, Jack Sato, said: "This FLNG framework agreement is a first-of-its-kind collaborative arrangement among world class EPCI and O&M contractors, investors and offtakers to collectively commercialise a series of discovered but stranded offshore gas resource opportunities.

"Our pre-agreed commercial arrangements, together with our pre-engineered 1.5 mill tonne per annum FLNG facility, can convert stranded gas resources into 'project sanction (FID) ready' projects within 24 months, while also allowing LNG offtakers access to competitive LNG supply sources and to attractive FLNG facility investments," he claimed. ■



Preliminary agreements have been signed for the unique FLNG designs

NextDecade cancels Galveston Bay project

NextDecade Corp has confirmed that a site identified in Texas City for an LNG export terminal - Galveston Bay LNG project - was not suitable for future development, following a recent study.

The US Army Corps of Engineers (USACE), Galveston District, had advised that a part of the Galveston Bay LNG site is under US Federal Navigation Servitude and is an active dredged material placement area (DMPA) for the Texas City ship channel federal project.

The company explained that the Galveston Bay project could not be constructed without USACE requesting that Congress - via the Water Resources Development Act or other legislation - authorises the release of its constitutional right of Navigation Servitude over this DMPA.

Due to the possibility for prolonged uncertainty around the prospect of release of the servitude by USACE, NextDecade has decided to forfeit the Galveston Bay LNG site and will no longer make lease payments to the site's landholders, the Texas General Land Office and the City of Texas City.

In addition, NextDecade has informed the US Federal Energy Regulatory Commission (FERC) of its intention to withdraw Galveston Bay LNG from the pre-filing proceedings and cease all related activities.

The company has also asked that the US Department of Energy (DoE) terminates its June, 2018 authorisation for LNG exports from the project.

"While it is unfortunate that the Galveston Bay LNG site is not viable for large-scale infrastructure development, this determination only further enhances the value of - and the need for - NextDecade's world-class Rio Grande LNG project in the Port of Brownsville," said Matt Schatzman, NextDecade's Chairman and CEO. "Since 2015, NextDecade's development activities have been

acutely focused on delivering Rio Grande LNG and developing the largest LNG export solution linking Permian Basin and Eagle Ford Shale natural gas to the rapidly tightening global LNG market."

The cancellation of the project has no impact on NextDecade's Rio Grande LNG project, where late-stage development activities are ongoing, the company stressed.

It said that it continued to work on the remaining commercial agreements needed to achieve a final investment decision (FID) on Rio Grande this year. ■

Wärtsilä to power six LNGCs

Wärtsilä is to supply the dual-fuel engines for six new 172,500 cu m LNGCs being built to serve the Arctic LNG 2 project in the Russian Arctic.

The order, which is valued at more than €100 mill, was placed in December, 2020 by Daewoo Shipbuilding and Marine Engineering (DSME).

Included in the contract is an option for another four vessels.

"This is a major newbuild project, and we were able to propose a technical solution that ensures clear benefits and cost savings for the customer. Our experience with LNG applications is unmatched, and this order represents an acknowledgement of that fact," said Östen Lindell, Sales Director, East Asia & China, Wärtsilä Marine Power.

Each vessel will be fitted with six Wärtsilä 46DF dual-fuel engines, plus gas valve units and auxiliaries. Deliveries of the equipment will commence in August, 2021.

Wärtsilä has earlier supplied the engines for 15 LNGCs serving

the Yamal LNG project, as well as numerous dual-fuel engines for other LNGCs built at DSME.

In another move, Wärtsilä Marine Power has signed a five year extension to its optimised maintenance agreement with Golar Management Norway.

Golar Management operates and manages a fleet of LNGCs and FSRUs.

The latest agreement covers 16 ship installations; 14 fitted with Wärtsilä 50DF dual-fuel engines, plus two with Wärtsilä 34DF dual-fuel and Wärtsilä 20DF dual-fuel engines.

This agreement will enable Golar to pursue a predictive maintenance strategy enabled by dynamic maintenance planning and asset diagnostics.

Furthermore, Wärtsilä's operational support provides round-the-

clock remote support and actionable advice from its expertise centres.

The combination of advanced diagnostics and Wärtsilä's equipment expertise greatly enhances the safety, reliability and efficiency of the equipment and systems installed, the company claimed.

It will also provide flexibility in maintenance scheduling by conducting maintenance based on actual equipment condition optimised for the vessels' operations.

"We are pleased to continue our long-term partnership with Wärtsilä with this service agreement extension. Wärtsilä's digital remote support capabilities have proved to be of great value for us, saving both time and costs by often eliminating the need to have service people sent on board in person," explained Øistein Dahl, Golar Management

Norway Managing Director.

"Lifecycle support is a key element of our strategy, and an important factor for us to be a trusted and reliable partner to our customers.

"With Wärtsilä optimised maintenance, we are able to increase availability and reduce unscheduled maintenance. By renewing and extending this agreement, we are also strengthening the partnership that exists between our companies, and we are proud that Golar is continuing their journey with us," added Henrik Wilhelms, Director Performance Services, Wärtsilä Marine Power.

The new five-year lifecycle solution agreement includes 14 vessels that had signed up to a five-year optimised maintenance earlier and two additional Golar vessels. ■

NEWS NUDGE

More ships ordered and delivered

PAO Sovcomflot (SCF) and Total have concluded a timecharter agreement for up to seven years for a newbuilding 174,000 cu m LNGC.

She will be owned and operated by SCF. Options were also concluded for up to two more vessels.

The new vessel will be the latest in the Atlanticmax LNGC series, with three sister ships already in operation - 'SCF La Perouse', 'SCF Barents' and 'SCF Timmerman'.

She will be fitted with an X-DF propulsion system, operated by a slow-speed diesel engine with a direct drive to the propellers, which will enable a substantial reduction in the vessel's fuel consumption when compared with previous generations of LNGCs, SCF claimed.

The new LNGC will also be fitted with a hull air lubrication system which, combined with two shaft power generators with fre-

quency-to-current converters, is expected to deliver a further significant decrease in fuel consumption and greenhouse gas emissions.

Another environmental feature of the Atlanticmax series is a partial re-liquefaction system, which allows cargo boil-off gas to be returned to the tanks.

Delivery of the LNGC to Total is scheduled for the third quarter of 2023.

Elsewhere, Flex LNG has taken delivery of the 174,000 cu m 'Flex Volunteer' from Hyundai Samho Heavy Industries (HSHI).

The LNGC— which is charter free — had been expected to deliver in late February, but Flex LNG brought forward the date, due to high prompt spot charter rates, the company said earlier this month.

Flex LNG still has one more newbuilding to come — the sister-ship 'Flex Vigilant' — which is due to be delivered from HSHI in May.

In addition, Samsung Heavy Industries (SHI) launched GasLog's 180,000 cu m LNGC newbuilding 'Gaslog Winchester' on 16th January.

She is scheduled for delivery in

August and will start a seven year charter to Cheniere together with her sistership 'Gaslog Wellington'.

Each vessel will be fitted with X-DF low-pressure, 2-stroke main engines, and GTT Mark III Flex Plus cargo containment systems.

Another newbuilding, 'LNG Rosenrot', has been delivered to joint owners MOL and Itochu Corp.

The vessel, which was delivered at the Okpo shipyard by Daewoo Shipbuilding & Marine Engineering (DSME) on 25th January, has entered into a charter with Uniper Global Commodities.

Her sistership 'LNG Schneeweisschen' which was delivered in July, 2018, is also under charter to Uniper.

She is also fitted with a WinGD X-DF 2-stroke engine, which can run on natural gas, marine gasoil and heavy fuel oil.

Turning to the small-scale sector, CIMC Sinopacific Offshore & Engineering Co (CIMC SOE) has launched the 'Avenir Allegiance' for Avenir LNG.

She is claimed to be the world's largest dual-purpose, LNG supply and bunkering vessel.

'Avenir Allegiance' was

launched on 27th January at the Zhoushan Changhong International Shipyard and is due for delivery in the third quarter of this year.

The LNGC will be the first 20,000 cu m vessel to join the Avenir fleet and the world's largest LNG bunkering vessel.

The Russian Zvezda Shipbuilding Complex has started the construction of the second Arc7 in a series of 15.

They are being built to be operated by PAO NOVATEK for its Arctic LNG2 project.

Meanwhile, Cosco Shipping Energy Transportation (CSET) is to invest in three LNGCs for the Arctic LNG 2 project.

CSET said that it had allocated \$923 mill for the construction of the vessels. Cosco will jointly operate the vessels with MOL.

A special purpose company jointly set up by Cosco and MOL has already signed shipbuilding contracts with DSME for the construction of three 172,500 cu m LNGCs.

Finally, brokers have reported the sale of the 2005-built 138,000 cu m LNGC 'LNG Pioneer' to Chinese interests for \$37 mill. ■

SAACKE introduces new GCU

Bremen-based SAACKE Marine Systems has introduced the GCU evo, following just under a year's development programme.

It is a further development of the the company's gas combustion unit (GCU) consisting of a combination of the combustion unit with a modified surface burner.

The abbreviation evo stands for 'evolution'.

"In order to take into account the ever decreasing space available in the engine room of LNGCs, we have now designed this system solution with significantly smaller dimensions with the same or even improved performance," Bernd König, SAACKE's Sales Director Offshore & GCU Systems explained.

In addition to saving space, the new model offers further advantages, such as emissions reduction, due to special cold flame technology and digital remote maintenance.

These are important aspects in the globally growing LNG market for shipyards, owners and charterers of LNGCs and bunker vessels, on which a GCU must be installed

as standard for the safe transport of LNG, the company claimed.

An optimised design not only reduces the required space on board, but also the installation costs. In addition, maintenance costs can be reduced, due to a less complex system. No special foundation is required for the GCU evo, which has an output of 5.5 to 63 MW.

The system can be mounted directly on the ship's deck as a stand-alone unit with a simple installation. There is no need to connect it to other components.

"In addition, due to its compact design and functionality, the surface burner offers a short flame and requires a smaller number of blowers. In addition, due to the lower pressure loss on the air side with the surface burner, a smaller motor output is required for the blowers and the power consumption is minimised as a result.

"All in all, a smaller footprint and height are needed and more

space is freed up for other components in the shipyards," König added.

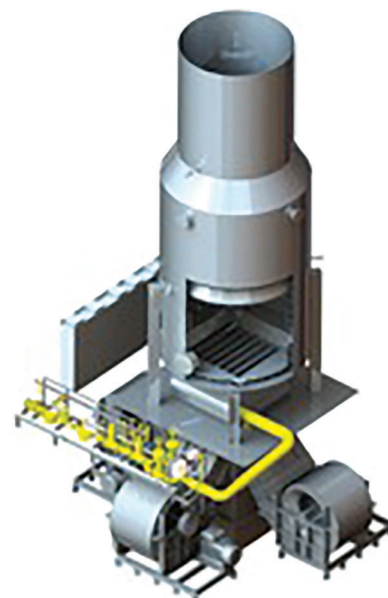
Online diagnostics

By using remote control, operators can also perform online diagnostics from the shore, for example, for preventive remote analysis.

While the SAACKE headquarters in Bremen headed up the engineering and project organisation, a test plant was built at the Chinese site in Qingdao. It can burn 800 kg/h of methane and was used for product development.

Ready for series production, the GCU is available in different output sizes from 0.4 to 4.5 t/h methane combustion.

The scope of supply includes the GCU system, including burner, control system, gas train and



SAACKE has introduced a new GCU

blower, as well as spare parts service. Installation and commissioning will be carried out in sections. SAACKE also offers training courses.

"Our basic GCU model will also remain in our portfolio, as it also covers output ranges of up to 6.5 t/h of methane for exceptional applications and can burn oil," König said. ■



NEWS NUDGE

Barry steps up at ExxonMobil LNG

ExxonMobil LNG has appointed Andrew Barry as Vice President for Global LNG Marketing.

Barry, formerly Managing Director of ExxonMobil Papua New Guinea (PNG), will take over from Alex Volkov who will move to the Upstream Integrated Solutions group as Commercial Vice President.

He was the managing direc-

tor of ExxonMobil Papua New Guinea (PNG) Limited for six years.

Peter Larden from ExxonMobil Canada will be replacing Barry in Port Moresby.

Larden joined ExxonMobil in Melbourne, Australia, in 2005 and has held progressively senior technical, supervisory and planning roles in Australia, the US, the UK and Africa. ■

LNG rate assessments

Spot market (155,000-165,000 cu m)

Region	This week	Change*
East of Suez	\$80,000	-\$50,000
West of Suez	\$85,000	-\$65,000
12 mos T/C	\$49,000	-

*Since last report (21/01/21)

Source: Fearnleys (03/02/21)

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WORLD LNG CARRIER ORDERBOOK

Name	Containment system	Propulsion	Yard	Delivery date	Capacity	Primary Owner
Hyundai Ulsan 3243	Unknown	XDF	Hyundai	01/11/2022	174000	Knutsen OAS Shipping
AS						
Hyundai Ulsan 3244	Unknown	XDF	Hyundai	01/05/2023	174000	Knutsen OAS Shipping
AS						
Hyundai Ulsan 3191	Unknown	XDF	Hyundai	01/06/2023	174000	Korea Line
Hyundai Ulsan 3198	Unknown	XDF	Hyundai	01/08/2023	174000	Korea Line
Daewoo 2514	Unknown	TFDE - Azipod	DSME	01/12/2022	175000	Sovcomflot
Daewoo 2515	Unknown	TFDE - Azipod	DSME	01/04/2023	175000	MOL
Daewoo 2516	Unknown	TFDE - Azipod	DSME	01/07/2023	175000	Sovcomflot
Daewoo 2517	Unknown	TFDE - Azipod	DSME	01/09/2023	175000	Sovcomflot
Daewoo 2518	Unknown	TFDE - Azipod	DSME	01/10/2023	175000	MOL
Daewoo 2519	Unknown	TFDE - Azipod	DSME	01/12/2023	175000	MOL
Zvezda 046	Unknown	TFDE - Azipod	Zvezda SSK	01/08/2024	172600	Smart LNG
Zvezda 047	Unknown	TFDE - Azipod	Zvezda SSK	01/09/2024	172600	Smart LNG
Zvezda 048	Unknown	TFDE - Azipod	Zvezda SSK	01/10/2024	172600	Smart LNG
Zvezda 049	Unknown	TFDE - Azipod	Zvezda SSK	01/11/2024	172600	Smart LNG
Zvezda 050	Unknown	TFDE - Azipod	Zvezda SSK	01/12/2024	172600	Smart LNG
Zvezda 051	Unknown	TFDE - Azipod	Zvezda SSK	01/08/2025	172600	Smart LNG
Zvezda 052	Unknown	TFDE - Azipod	Zvezda SSK	01/09/2025	172600	Smart LNG
Zvezda 053	Unknown	TFDE - Azipod	Zvezda SSK	01/10/2025	172600	Smart LNG
Zvezda 054	Unknown	TFDE - Azipod	Zvezda SSK	01/11/2025	172600	Smart LNG
Zvezda 055	Unknown	TFDE - Azipod	Zvezda SSK	01/12/2025	172600	Smart LNG
Hyundai Samho 8095	Unknown	XDF	Hyundai	01/05/2023	174000	Knutsen
Hyundai Samho 8096	Unknown	XDF	Hyundai	01/06/2023	174000	Knutsen
Hyundai Ulsan 3189	Unknown	XDF	Hyundai	01/03/2023	174000	ICBC Leasing
Hyundai Ulsan 3190	Unknown	XDF	Hyundai	01/05/2023	174000	ICBC Leasing
United Fortune	Unknown	XDF	Hudong-Zhonghua	01/04/2023	174000	China LNG Shipping
United Glory	Unknown	XDF	Hudong-Zhonghua	01/01/2023	174000	China LNG Shipping
United Prosperity	Not Applicable	XDF	Hudong-Zhonghua	01/10/2022	174000	China LNG Shipping
Hyundai Samho 8033	GTT MK III Flex	XDF	Hyundai	01/06/2022	173000	NYK
Hyundai Ulsan 3187		XDF	Hyundai	01/11/2022	174000	JP Morgan
Hyundai Ulsan 3188		XDF	Hyundai	01/12/2022	174000	JP Morgan
Hyundai Samho 8091	Unknown	XDF	Hyundai	01/08/2022	174000	Knutsen
Hyundai Samho 8092	Unknown	XDF	Hyundai	01/10/2022	174000	Knutsen
Hyundai Samho 8093	Unknown	XDF	Hyundai	01/11/2022	174000	Knutsen
Hyundai Samho 8094	Unknown	XDF	Hyundai	01/12/2022	174000	Knutsen
Hyundai Ulsan 3185		XDF	Hyundai	01/08/2022	174000	Korea Line
Hyundai Ulsan 3186		XDF	Hyundai	01/10/2022	174000	Korea Line
Daewoo 2508	Unknown	XDF	DSME	01/01/2022	174000	Maran Gas Maritime
Hyundai Samho 8026	GTT MK III Flex	XDF	Hyundai	01/06/2022	174000	H-Line
Samsung 2315	Unknown	XDF	Samsung	01/06/2022	173400	SinoKor
Samsung 2316	Unknown	XDF	Samsung	01/09/2022	173400	SinoKor
Samsung 2317	Unknown	XDF	Samsung	01/12/2022	173400	SinoKor

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 = 25th November 2020

Name	Containment system	Propulsion	Yard	Delivery date	Capacity	Primary Owner
Samsung 2318	Unknown	XDF	Samsung	01/03/2023	173400	SinoKor
Samsung 2364	GTT MK III Flex+	XDF	Samsung	01/01/2023	174000	MISC
Samsung 2365	GTT MK III Flex+	XDF	Samsung	01/02/2023	174000	MISC
Daewoo 2509	Unknown	MEGI	DSME	01/08/2022	174000	BWGas
Daewoo 2510	Unknown	MEGI	DSME	01/09/2022	174000	BWGas
Hyundai Samho 8025		XDF	Hyundai	01/12/2021	174000	H-Line
Samsung 2355	GTT MK III Flex	XDF	Samsung	01/10/2021	174000	NYK
Zvezda 041	GTT MK III	TFDE - Azipod	Zvezda SSK	01/03/2023	172600	Smart LNG
Zvezda 042	GTT MK III	TFDE - Azipod	Zvezda SSK	01/09/2023	172600	Smart LNG
Zvezda 043	GTT MK III	TFDE - Azipod	Zvezda SSK	01/10/2023	172600	Smart LNG
Zvezda 044	GTT MK III	TFDE - Azipod	Zvezda SSK	01/11/2023	172600	Smart LNG
Zvezda 045	Unknown	TFDE - Azipod	Zvezda SSK	01/12/2023	172600	Smart LNG
Daewoo 2507	GTT 96 GW	XDF	DSME	01/10/2021	174000	Maran Gas Maritime
Hudong-zhonghua H1829a	GTT 96 L03+	XDF	Hudong-Zhonghua	01/03/2022	170520	CSSC
Hudong-zhonghua H1830a	GTT 96 L03+	XDF	Hudong-Zhonghua	01/06/2022	170520	CSSC
Hyundai Ulsan 3111	GTT MK III Flex	XDF	Hyundai	01/01/2023	174000	Capital Gas
Hyundai Ulsan 3157	GTT MK III Flex	XDF	Hyundai	01/12/2021	174000	Tsakos Energy Navigation
Hyundai Ulsan 3145	Unknown	XDF	Hyundai	01/09/2022	180000	SK Shipping
Hyundai Samho 8032	GTT MK III Flex	XDF	Hyundai	01/01/2022	174000	NYK
Hyundai Ulsan 2939	GTT MK III Flex	XDF	Hyundai	01/10/2021	180000	SK Shipping
Samsung 2319	GTT MK III Flex	XDF	Samsung	01/03/2022	174000	JP Morgan
Samsung 2336	GTT MK III Flex	XDF	Samsung	01/12/2021	174000	JP Morgan
Samsung 2337	GTT MK III Flex	XDF	Samsung	01/07/2022	174000	JP Morgan
Daewoo 2506	GTT 96	MEGI	DSME	01/11/2021	174000	Maran Gas Maritime
Clean Cajun	Unknown	XDF	Hyundai	01/04/2022	200000	Dynagas
Clean Copano	Unknown	XDF	Hyundai	01/07/2022	200000	Dynagas
Daewoo 2505	Unknown	MEGI	DSME	01/07/2021	174000	MOL
Asklipios	GTT MK III Flex	XDF	Hyundai	01/09/2021	174000	Capital Gas
Daewoo 2504	GTT 96	XDF	DSME	01/09/2021	174000	Maran Gas Maritime
Elisa Aquila	GTT MK III Flex	XDF	Hyundai	01/03/2022	174000	NYK
Daewoo 2502	GTT 96 GW	XDF	DSME	01/09/2021	173400	Nakilat
Daewoo 2503	GTT 96 GW	XDF	DSME	01/01/2022	173400	Nakilat
Adamastos	GTT MK III Flex	XDF	Hyundai	01/08/2021	174000	Capital Gas
Yiannis	GTT 96 GW	MEGI	DSME	01/06/2021	174000	Maran Gas Maritime
Hudong-zhonghua H1828a	GTT 96 L03+	XDF	Hudong-Zhonghua	01/01/2022	174000	CSSC
Mu Lan	GTT 96 L03+	XDF	Hudong-Zhonghua	01/06/2021	174000	CSSC
Samsung 2313	Unknown	XDF	Samsung	01/05/2021	180000	Celsius Shipping
Samsung 2314	Unknown	XDF	Samsung	01/08/2021	180000	Celsius Shipping
Minerva Chios	GTT MK III Flex+	XDF	Samsung	01/07/2021	174000	Minerva Marine
Marvel Swan	Unknown	XDF	Samsung	01/03/2021	173400	Navigare
Samsung 2332	GTT MK III Flex+	XDF	Samsung	01/11/2022	174000	Minerva Marine
Bw Helios	GTT 96 GW	MEGI	DSME	01/03/2021	174000	BWGas
Bw Lesmes	GTT 96 GW	MEGI	DSME	01/02/2021	174000	BWGas
Daewoo 2495	GTT 96 GW	XDF	DSME	01/06/2021	174000	Maran Gas Maritime

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 = Data last updated = 25th November 2020

Name	Containment system	Propulsion	Yard	Delivery date	Capacity	Primary Owner
Energy Intelligence	GTT 96 GW	MEGI	DSME	01/06/2021	174000	Alpha Gas
Gail Bhuwan	GTT 96 GW	MEGI	DSME	01/02/2021	180000	MOL
Gaslog Wellington	GTT MK III Flex+	XDF	Samsung	01/06/2021	180000	GasLog
Lng Rosenrot	GTT 96 GW	MEGI	DSME	01/01/2021	180000	MOL
LNG Ships Express	GTT MK III Flex	XDF	Samsung	01/03/2021	174000	TMS Cardiff Gas
Samsung 2306	GTT MK III Flex	XDF	Samsung	01/09/2021	174000	NYK
Samsung 2307	GTT MK III Flex	XDF	Samsung	01/12/2021	174000	NYK
Samsung 2312	GTT MK III Flex+	XDF	Samsung	01/08/2021	180000	GasLog
Diamond Gas Crystal	GTT MK III Flex	XDF	Hyundai	01/05/2021	174000	NYK
Diamond Gas Victoria	GTT MK III Flex	XDF	Hyundai	01/09/2021	174000	NYK
Hellas Athina	GTT MK III Flex	XDF	Hyundai	01/09/2021	174000	Latsco Shipping
Hellas Diana	GTT MK III Flex	XDF	Hyundai	01/03/2021	174000	Latsco Shipping
Lngships Athena	GTT MK III Flex	XDF	Hyundai	01/03/2021	174000	TMS Cardiff Gas
Lngship Manhattan	GTT MK III Flex	XDF	Hyundai	01/04/2021	174000	TMS Cardiff Gas
Cool Racer	GTT MK III Flex	XDF	Hyundai	01/02/2021	174000	Thenamaris
Minerva Kalymnos	GTT MK III Flex+	XDF	Samsung	01/02/2021	174000	Minerva Marine
Samsung 2302	GTT MK III Flex	XDF	Samsung	01/03/2021	174000	NYK
Cobia Lng	GTT MK III Flex	XDF	Hyundai	01/02/2021	174000	TMS Cardiff Gas
Sof Timmerman	GTT MK III Flex	XDF	Hyundai	01/02/2021	174000	Sovcomflot
Celsius Canberra	GTT MK III Flex	XDF	Samsung	01/12/2020	180000	Celsius Shipping
Gaslog Galveston	GTT MK III Flex	XDF	Samsung	01/12/2020	174000	GasLog
Aristidis I	GTT MK III Flex	XDF	Hyundai	01/11/2020	174000	Capital Gas
Global Star	GTT 96	MEGI	DSME	01/01/2021	173400	Nakilat
Aristarchos	GTT MK III Flex	XDF	Hyundai	01/03/2021	174000	Capital Gas
Attalos	GTT MK III Flex	XDF	Hyundai	01/06/2021	174000	Capital Gas
Flex Freedom	GTT 96 GW	MEGI	DSME	01/11/2020	173400	Flex LNG
Flex Vigilant	GTT MK III Flex	XDF	Hyundai	01/05/2021	174000	Flex LNG
Flex Volunteer	GTT MK III Flex	XDF	Hyundai	01/02/2021	174000	Flex LNG
Energy Integrity	GTT 96 GW	MEGI	DSME	01/05/2021	173400	Alpha Gas
Energy Endeavour	GTT 96 GW	MEGI	DSME	01/12/2020	173400	Alpha Gas
Minerva Limnos	GTT 96 GW	MEGI	DSME	01/03/2021	173400	Minerva Marine
Minerva Psara	GTT 96 GW	MEGI	DSME	01/01/2021	173400	Minerva Marine
Dorado LNG	GTT MK III	XDF	Samsung	01/11/2020	174000	TMS Cardiff Gas

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 = Data last updated = 25th November 2020



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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	Pelita Energy	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	Coral Favia	10,000	LNG/LPG/Ethylene	Worldwide	No	Anthony Veder
2010	Coral Fraseri	10,000	LNG/LPG/Ethylene	Worldwide	No	Anthony Veder
2011	Akebono Maru	3,556	LNG	Japan	Yes	Chuo Kaiun
2011	Coral Furcata	10,000	LNG/LPG/Ethylene	Worldwide	No	Anthony Veder
2011	Coral Fungia	10,000	LNG/LPG/Ethylene	Worldwide	No	Anthony Veder
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
2015	LNG Barge TBN	3,000	LNG	US Coast	Yes	LNG America
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	PetroChina TBN	30,000	LNG	China		PetroChina
2016	Clean Jacksonville	2,200	LNG	US Coast	Yes	CME
2016	LNG Prime	2,250	LNG	Northwest Europe	Yes	Veka Deen LNG
2016	JS Ineos Indepence	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2016	JS Ineos Innvation	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2016	JS Ineos Inspiration	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2016	Hai Yang Shi You 301	30,000	LNG	Bali FSU	Yes	CETS (CNOOC)
2017	Oizmendi	600	LNG	Bilbao	Yes	Itsas Gas
2017	Green 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

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Built	Name	CBM	Cargo Type	Trading area	Trading in LNG?	Ship Owner / Operator
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	Coral Encanto	30,000	LNG	China	Yes	Anthony Veder
2018	HUA XIANG 8	13,720	LNG	China	Yes	Zhejiang Huaxiang
2018	LNG London	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	Bunker Breeze	0	LNG	Barcelona	Yes	Suardiaz Energy Shipping
2019	SM Jeju LNG1	7,500	LNG	Korea	Yes	Korea Line
2019	Gas Agility	18,600	LNG	NWE	Yes	MOL
2019	Flexfueller 001	1,480	LNG	Amsterdam	Yes	Titan LNG
2020	Avenir Advantage	7,500	LNG	Mediterranean	Yes	Stolt-Nielsen Gas
2020	Avenir Accolade	7,500	LNG	Mediterranean	Yes	Stolt-Nielsen Gas
2020	SM Jeju LNG2	7,500	LNG	Korea	Yes	Korea Line
2020	CNTIC VPOWER Global	28,000	LNG	Myanmar	Yes	Dalian Inteh Group
2020	Q-LNG 4000	4,000	LNG	US Coast	Yes	Q-LNG Transport/Harvey Gulf
2020	Avenir Aspiration	7,500	LNG		Yes	Stolt-Nielsen Gas
2020	FueLNG Bellina	7,500	LNG	Singapore	Yes	FueLNG
2020	Kaguya	3,500	LNG	Japan	Yes	CLS
2020	Optimus	6,000	LNG	NWE	Yes	Elenger
2020	ENN TBN	8,500	LNG	China	Yes	ENN
2020	Flexfueller 002	1,480	LNG	Antwerp	Yes	Titan LNG
2020	Ecobunker Tokyo Bay	2,500	LMG	Japan	Yes	Ecobunkers
2021	Stolt TBN (option)	7,500	LNG		Yes	Stolt-Nielsen Gas
2021	Knutsen TBN	30,000	LNG	Mediterranean	Yes	Knutsen OAS
2021	Dmitry Mendelev	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
2021	TBN	18,600	LNG	Mediterranean	Yes	MOL
2021	TG TBN	500	LNG	Korea	Yes	Trans Gas
2022	Stolt TBN	20,000	LNG	Worldwide	Yes	Stolt-Nielsen Gas
2022	Stolt TBN	20,000	LNG	Worldwide	Yes	Stolt-Nielsen Gas
2022	Clean Cañaveral	5,400	LNG	USG	Yes	PNE
2023	Cryopeak TBA	4,000	LNG	West Canada	Yes	Cryopeak
2022	Knutsen TBN	5,000	LNG	Spain	Yes	Knutsen OAS
2023	Knutsen TBN	12,500	LNG	Spain	Yes	Knutsen OAS
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

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