

LNG Shipping News

AN LNG JOURNAL TITLE ON LNG CARRIERS

14 November 2019

GasLog looks to the future

GasLog has taken its usual snapshot of the market in the company's third quarter 2019 results presentation.

Compared to 3Q19, this quarter's supply is expected to grow by 6%, to 95 mill tonnes, which will principally be driven by a full quarter of production from new US projects, as well as initial production from the Elba Island facility, the LNGC owner said.

Including projects approved earlier in the year, 2019 has set a record for LNG FIDs, totalling 63 mill tonnes per annum year-to-date and surpassing the 2005 record of 46 mill tonnes.

In addition, the 2.1 mill tonne Woodfibre LNG project in Canada is expected to reach FID by the end of this year, while ExxonMobil recently awarded engineering contracts for the 15.2 mill tonnes per annum Rovuma LNG project ahead of an expected FID in 2020.

In total, Wood Mackenzie said that it expected 115 mill tonnes of new capacity to commence production between 2020 and 2024.

Demand increase

For the 12 months up to 30th September, 2019, LNG demand was 351 mill tonnes, compared with 308 mill for the previous 12

months, an increase of 14%.

The global gas market is well-supplied, given the combination of ample inventories following higher-than-average temperatures in the 2018/19 winter and LNG supply growth so far this year.

This has resulted in further inventory build ups, notably in Europe where storage is currently at 98% of capacity, according to Gas Infrastructure Europe, plus sustained pressure on gas pricing, with European and UK gas levels recently reaching their lowest since 2009. Similarly, Asian LNG prices are currently about 40% below 2018 levels.

A deteriorating macro-economic outlook, particularly in China, could present a near-term LNG demand problem by reducing natural gas consumption growth. However, the long-term fundamentals for gas and LNG demand growth were still very attractive, underpinned by continued energy demand growth and the significantly better emissions profile of gas versus coal.

In addition, GasLog said that Wood Mackenzie recently said that Europe's gas import dependency

will continue to grow, due to falling domestic production in many countries and declining pipeline flows from North Africa and Central Asia, as well as potential limits on Russia's share of European gas imports.

GasLog said that it continued to believe that the ongoing LNG shipping market tightening will persist through at least early 2021, which may result in further term charter opportunities for on-the-water vessels, as their existing charters expire.

As of 28th October, 2019, the LNG fleet and orderbook (excluding FSRUs) and vessels with capacity below 100,000 cu m stood at 507 and 110 vessels, respectively, according to Poten, with the orderbook representing 22% of the on-the-water fleet, unchanged from the beginning of 2019.

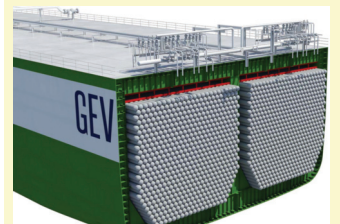
Out of the LNGCs in the current orderbook, 68, or 62%, have multi-year contracts attached. There have been 37 vessels ordered thus far in 2019, including 13 during 3Q19, compared to 63 in 2018, suggesting that the pace of newbuilding ordering has continued to moderate. ■

SHIPPING NEWS AGENDA

MARKETING

GEV looks at US Gulf

2



YPF's first cargo

2

BUSINESS

Angola consortium

3

ADNOC sells to oil majors

3

Grain capacity boost

4

FINANCE

SCF gets LNGC finance

4

Solid growth for GasLog

5

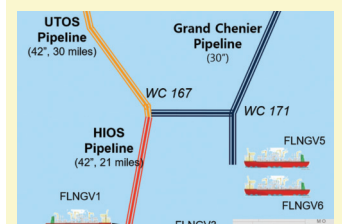
TECHNOLOGY

Babcock's continued success

8

FLNG project advance

8



Sandvik wins LNGC contracts

9

LNG ORDERBOOK

LNG carrier orderbook

11

LNG small scale fleet

14



Woodfibre is due to take FID by the end of this year

GEV looks to US Gulf for CNG export terminal

Global Energy Ventures (GEV), a developer of compressed natural gas (CNG) projects, has chosen the US Gulf as its next region to develop an CNG export terminal.

GEV has commenced due diligence with operators of numerous offshore platforms connected to existing offshore and onshore gas pipelines serving producers in and near the US Gulf of Mexico, the company said.

The US Gulf of Mexico contains under utilised gas pipelines and platforms with connecting pipelines to shore for access to

the major gas resources available along the US Gulf States.

In selecting a US site, GEV said that its strategy is to position the export facility where all or most of the infrastructure is already in place, resulting in the company only adding compression and loading facilities to transfer the CNG to its CNG 200 Optimum ships.

GEV said it had started discussions with an offshore platform operator with capacity to transport the company's initial requirement of 220 mill cu ft per day. The parties will work together to determine the technical and commercial viability of re-designing

an existing platform as a potential CNG export terminal.

Executive Director & Chief Development Officer, Garry Triglavcanin commented: "The US has an abundance of well-priced gas and extensive network of gas transport pipelines, so it is a logical region for GEV to establish a CNG export site to market gas to attractively priced regional markets that include Mexico, Central America and Caribbean.

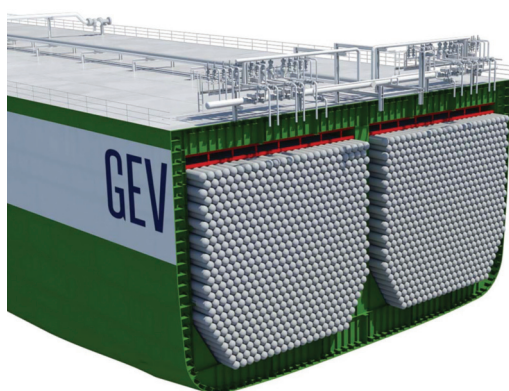
"Our research into regional markets within 2,000 nautical miles that are gas constrained and/or are proposing gas fired power generation, contemplating LNG or other fuels. Using a Henry Hub Index feed gas price, our analysis of regional gas markets suggests CNG can be delivered to such regions on a very competitive basis," he said.

Executive Chairman & CEO,

Maurice Brand, added: "GEV's management team has a long and successful history of developing and permitting a US gas export facility to be shovel ready and has maintained a strong network of skilled resources who are excited to work on what is expected to be the first CNG export terminal in the Gulf Coast.

"Our discussions with a number of parties with onshore and offshore sites has quickly reinforced our view that an offshore export facility can get GEV to market with a timely, economic and practical solution.

"With up to 80% of the capital cost in our projects related to the CNG shipping, we can avoid the elevated costs associated with onshore facilities ramping up in construction for gas export sites in the next three to five years," he explained. ■



A cutaway of a GEV Optimum CNGC

YPF loads first commercial LNG cargo

Argentina's state-owned oil company YPF has loaded its first commercial LNG export cargo from its new floating facility.

The company issued a tender, which closed on 6th November, to sell 2.1 trill Btu of LNG to be loaded from 'FLNG Tango', the FLNG moored off Bahia Blanca, which arrived in February.

The cargo was loaded from the FLNG on 26th October on the YPF chartered LNGC 'Excalibur', which was anchored off Bahia Blanca with her destination stated as Atlantic Basin, shiptracking data from Refinitiv showed, according to Reuters.

A previous trial cargo was loaded on the same vessel but at that time it was chartered by Cheniere.

"It takes around 40 days to produce and load a full cargo... their next one will be on the 'Methane Kari Elin'," a trader told Reuters.

Rising output from Vaca Muerta, one of the world's largest reserves of shale oil and gas, helped Argentina to reduce LNG imports by more than 20% last

year to 2.6 mill tonnes, according to industry group GIIGNL. ■



The LNGC 'Excalibur' has loaded from the Tango LNG unit off Bahia Blanca

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ADNOC expands supply agreements

ADNOC LNG has concluded supply agreements with subsidiaries of both BP and Total.

These agreements effectively take care of the majority of Abu Dhabi's LNG production through 1Q22.

"With these new supply agreements, ADNOC LNG has shown that it can react quickly and decisively to changing market conditions while ensuring the security and quality of delivery," said ADNOC LNG CEO, Fatema Al Nuaimi. "With the support of our shareholders, we have maximised access to new markets with strong LNG growth potential.

"We have also successfully demonstrated our ability to shift

from one customer to multiple customers while maintaining our plant's high reliability and accepting ships from different customers at our jetty. We continue to deliver on time, with the right specification, quality and agreed amounts," she said.

Since April, 2019, ADNOC has moved from supplying 90% of its LNG supplies to a single utility customer in Japan, believed to be Jera, which remains an important customer for ADNOC LNG, to supplying 90% of its LNG output to a range of clients and receiving ter-

minals in more than eight countries across southern and south-east Asia, including India, China, South Korea and Taiwan.

"BP is delighted to have concluded this LNG supply agreement," said Robert Lawson, BP's COO Gas, Integrated Supply and Trading. "ADNOC LNG is a long standing supplier to BP's integrated supply and trading business. We are very pleased to have secured this new multi-year supply agreement."

"The two year LNG supply agreement contributes to the growth and flexibility of Total's LNG portfolio and strengthens our long standing relationship with ADNOC LNG," added Laurent Chevalier, Total's Vice President Middle East, Gas, Renewables & Power.

ADNOC LNG produces about 6 mill tonnes per annum of LNG from its facilities at Das Island off the coast of Abu Dhabi.

The company is majority owned by ADNOC, which has a 70% share. Additional shareholders are Mitsui & Co (15%), BP (10%), and TOTAL (5%). ■



ADNOC LNG's BP and Total agreement signing ceremony

Angola forms consortium for large LNG project

Angola has formed a consortium with five international oil companies, including Eni and Chevron, to develop LNG for its Soyo plant, the recently formed national oil, gas and biofuels agency ANGP said.

This project will have an initial cost of \$2 bill, and aims to start production by 2022, an ANGP spokesman told Reuters on the sidelines of the Africa Oil Week conference in Cape Town.

Italy's Eni will operate the project, and the consortium members will share costs according to their participation. Chevron will take a 31% stake, Eni 25.6%, Sonangol P&P 19.8%, Total 11.8% and BP a 11.8% stake in the project.

The Soyo LNG plant is designed to process 1.1 bill cu ft of natural gas per day and has the capacity to produce 5.2 mill tonnes of LNG per year, as well as propane, butane and condensate. ■

EPIK selects financial adviser for Newcastle (NSW) project

LNG project development company EPIK has appointed Australia and New Zealand Banking Group (ANZ) to serve as financial adviser for its Newcastle GasDock LNG import terminal.

ANZ will provide debt and equity advisory services for EPIK's FSRU project at the Port of Newcastle in New South Wales (NSW) in the lead up to a final investment decision (FID), anticipated in mid-2020.

"We are pleased to be partnering with EPIK as financial adviser in the development of this critical infrastructure project, which is uniquely positioned to

provide competitive gas supply to the region," said Ian Wainwright, ANZ Executive Director.

In August, the NSW Government declared EPIK's Newcastle GasDock LNG import terminal project as Critical State Significant Infrastructure (CSSI), recognising the project for its vital role in providing long-term energy and gas security to the region.

"ANZ adds tremendous finan-

cial and advisory expertise to the Newcastle GasDock project as we continue to make significant commercial and regulatory progress," said Jee Yoon, EPIK's Managing Director. "We have confidence that with ANZ's assistance we will be able to secure optimal capital resources for the project, allowing us to provide the most competitive supply to the region."

NSW currently relies on interstate imports for around 95% of its gas supply and recent changes in the domestic market have resulted in significant market volatility and price increases, negatively impacting industry

and households across the state.

As projected, Newcastle GasDock terminal will be capable of supplying more than 80% of NSW's current gas demand, with the potential to increase throughput as required.

Apart from ANZ, the Newcastle GasDock project is supported by several advisers and consultants, including environmental and planning support from Arup, engineering, design and construction services from Australian EPC firm, Watpac, as well as legal and regulatory counsel from K&L Gates, among others. ■

ANZ adds tremendous financial and advisory expertise to the Newcastle GasDock project...

- Jee Yoon, Managing Director, EPIK

Shakespeare Martineau advises Grain LNG on capacity expansion

UK-based Grain LNG is seeking to increase its redelivery capacity.

This could see its storage facilities rise to 1.2 mill cu m and regasification capacity to 780 GWh/d.

The expansion is set to be operational from mid-2025. The 'open season' process started on 1st November and ends on 31st March, 2020.

Shakespeare Martineau's senior partner and head of energy, Andrew Whitehead, along with legal director, Chandni Ruparelia, provided advice to Grain LNG throughout.

They have helped to create the extensive access rules and commercial arrangements on which the new capacity will be offered, the law firm said.

Andrew Whitehead said: "This is an impressive landmark for Grain LNG, as well as being a considerable development for the UK's energy market. A vital part of the country's energy offerings, LNG will continue to be relied upon far into the future. As a result, it is of the highest importance that capacity growth continues. Without it, supply will become idle and the UK's position as a global gas hub will weaken.

"It has been a fascinating experience to work alongside Grain LNG during this first stage of the process. It has involved some incredibly technical contract work, which has been great to get stuck into.

I'm certain Grain LNG will enjoy a fantastic open season," he said.

Nicola Duffin, Head of Commercial at Grain LNG, added: "With the help of Shakespeare Martineau, we have developed a unique and innovative service offering, designed to provide capacity holders with maximum flexibility.

"As we progress through the open season, we will be working closely together to ensure that the final contracts meet market needs," she concluded.

Grain LNG, which is part of National Grid, is located near the UK's River Thames estuary in the River Medway. It is deemed an essential



Shakespeare Martineau's Andrew Whitehead

element of the UK's energy infrastructure and boasts the largest LNG tank capacity in Europe.

The terminal's current capacity is claimed to be highly sought after among global energy companies, as it allows direct access to the UK's National Balancing Point (NBP) trading hub. ■

Two more Mozambique trains planned

French energy major Total aims to expand its Mozambique LNG project by adding two extra trains.

"We're starting to look at studies for train 3 and train 4, because the resources are clearly there to develop," Mike Sangster, head of Total Exploration and Production for Nigeria, told the oil conference in Cape Town, South Africa.

Total concluded the acquisition of Anadarko's 26.5% interest in the Mozambique LNG project for \$3.9

bill in September, as part of its takeover of Anadarko's Africa assets that included projects in Ghana and Algeria.

Sangster added that the company expected to close its acquisition of Anadarko assets in Ghana and Algeria early next year once regulatory approvals were cleared.

In September, Total said that the Mozambique project would include the construction of a two-train liquefaction plant with a capacity of 12.9 mill tonnes per year.

Total claimed that 90% of Mozambique LNG was already sold under long-term contracts largely linked to the oil price. ■

SCF gains financing and charter for first Arctic LNG 2 LNGC

SCF Group and VEB.RF Group, a Russian finance provider, signed an agreement for lease financing of the lead ship in a series of icebreaking LNGCs expected to be built to serve the Arctic LNG 2 project.

At the same time, SCF Group and NOVATEK signed a long-term timecharter agreement for the vessel.

She will be constructed at the Zvezda Shipbuilding complex in the Russian Far East and will be designed for year-round operations in the ice conditions of the Kara Sea and the Gulf of Ob, being able to sail independently through ice over two metres thick.

All of the LNGCs planned in the new series will be operated under the Russian flag. The Russian Maritime Register of Shipping (RS) will provide technical supervision during the vessels' construction. ■

NEWS NUDGE

Gunvor takes 'Marshal Vasilevskiy'

It has been reported that Gunvor had chartered the 'Marshal Vasilevskiy' from Gazprom to load a gas cargo in the US.

According to Refinitiv Eikon data, the dual-purpose FSRU and LNGC left Rotterdam on 4th November and is due to arrive at the Sabine Pass LNG terminal on 26th November, loading three days later. The

cargo's destination is thus far unknown.

Previously, between August and November, she was chartered to Austrian company OMV

and prior to that, was moored near Kaliningrad as an FSRU to offset any potential disruption to gas pipeline flows via Belarus to the area. ■



Gunvor has reportedly fixed the 'Marshal Vasilevskiy' to load a US cargo

GasLog's solid growth

GasLog Ltd and its subsidiaries, reported revenues of \$165.6 mill, a profit of \$8.9 mill and loss per share of (\$0.20) for the three-month period ended 30th September.

For 3Q18, the figures were \$158.4 mill, \$39.3 mill and earnings per share of \$0.19, respectively.

EBITDA was recorded at \$114.2 mill, adjusted EBITDA of \$115 mill, adjusted profit at \$25.5 mill and adjusted earnings per share of \$0.01 for 3Q19, compared to \$114.1 mill, \$114.2 mill, \$32.3 mill and \$0.11, respectively, for the third quarter of 2018.

A quarterly dividend of \$0.15 per common share is payable on 21st November, 2019.

On 27th August, 2019, GasLog signed a 10-year timecharter to provide an FSU for a gas-fired power project being developed in Panama. The timecharter is expected to be fulfilled by the conversion of the 'GasLog Singapore', which will commence in late 2020.

Charter signed

On 31st July, the company took delivery of the 'GasLog Warsaw', a 180,000 cu m Mark III Flex Plus LNGC carrier fitted with a low pressure dual fuel 2-stroke X-DF propulsion system.

She was immediately delivered into a charter with a wholly-owned subsidiary of Cheniere Energy for a period prior to the start of her long-term charter with a subsidiary of Endesa, due to start in May, 2021.

CEO, Paul Wogan, said: "A recovery in the LNG shipping spot market during the third quarter of 2019, as well as the continued contribution of our newbuild vessels with long-term contracts, allowed GasLog to generate solid year-on-year growth in revenues and EBITDA for 2019 year-to-date. Our two ships on charter to Gunvor Group have delivered strong performances under their market-linked charters, underpinned by their 100% utilisation.

"Based on the tightening spot LNG shipping market since the end of the third quarter and the accompanying rise in freight rates, we expect to deliver a further uplift in our financial performance during the fourth quarter. Elsewhere, we are making good progress towards the financing of



GasLog Ltd has benefited from increased revenue year-on-year

our newbuild programme.

"A key focus for GasLog is to enhance the earnings and cash flow visibility of our tri-fuel diesel electric (TFDE) and steam turbine propulsion vessels. I am therefore pleased to report that we signed a 10-year charter during the quarter for one of our TFDEs to act as an FSU for a power project being developed in Panama.

"In tandem with these commercial successes, we continue to focus on our market-leading operations and safety record, and I am very proud that the crew of the 'Methane Alison Victoria' was recently selected as 'Crew of the Year' at the prestigious IHS Safety at Sea 2019 awards.

"We have been predicting a tighter LNG shipping market, as increasing US LNG output combines with a seasonal uptick in demand for gas, resulting in rising demand for shipping and higher utilisation of the global fleet. These underlying trends in the LNG commodity and shipping markets point towards a structurally tighter market through 2020 and into 2021.

"We believe this will positively impact our efforts to secure term business for several of our on-the-water vessels. As we benefit from these positive trends we will continue to look for opportunities to reward our shareholders," he said. ■

GasLog Partners buoyed by new vessel and charter activity

GasLog Partners' recorded its highest quarterly results for revenues, adjusted profit, EBITDA in the third quarter of this year.

Revenues, profit, adjusted profit and EBITDA for 3Q19 were \$96.5 mill, \$29.4 mill, \$31.9 mill and \$71.8 mill, respectively, plus a distributable cash flow of \$34.3 mill.

A quarterly cash distribution declared of \$0.55 per common unit was unchanged from 2Q19 and 3.8% higher than 3Q18.

CEO Andrew Orekar, commented: "I am pleased to announce a strong quarterly financial and operational performance by GasLog Partners, as demonstrated by our highest-ever quarterly Partnership performance results for revenues, adjusted profit, EBITDA and distributable cash flow, and the continued outstanding performance of our fleet in terms of

safety and availability.

"The 'GasLog Shanghai', operating under a multi-year market-linked contract with a subsidiary of Gunvor Group, delivered strong results, compared to vessels operating in the spot market, as a result of the 100% utilisation guaranteed by the charter.

"Our third quarter reflected a full quarter's contribution from several strategic actions the Partnership has executed in the year to date, including the acquisition of the 'GasLog Glasgow', the elimination of GasLog Ltd's incentive distribution rights (IDRs), the new three-and-a-half-year charter with Gunvor for the 'GasLog Shanghai' and, lastly, the repurchase of ap-

proximately 2% of our outstanding common units since authorising our unit repurchase programme in January.

"On the back of this performance, we are reiterating our distribution growth guidance of 2% to 4% for 2019, which considers our positive outlook for LNG shipping while also accounting for our one scheduled drydocking and one steam turbine propulsion vessel whose charter is scheduled to end in the fourth quarter of 2019," he concluded.

Steam LNGC charter

On 22nd March, 2018, GasLog Partners entered into a one year timecharter agreement with

Trafigura Maritime Logistics for a 145,000 cu m steam vessel (either the 2006-built 'Methane Jane Elizabeth' or the 2007-built 'Methane Alison Victoria' as nominated by the Partnership).

Since then, the 'Methane Jane Elizabeth' was nominated for the timecharter, which is expected to commence this month. Trafigura has options to extend the charter for up to four years at an escalating rate.

As of 30th September, 2019, GasLog Partners had \$65.8 mill of cash and cash equivalents, of which \$11.4 mill was held in current accounts and \$54.4 mill was held in time deposits with an original duration of less than three months. ■

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Digitizing Workforce Management

Solutions to enable a safe, secure and productive industrial workforce

For industrial plants, the need to optimize safety, productivity and compliance has a direct impact on profitability. But, there is one factor that plays a greater role than any other—the human factor.

Growing scale of operations; meeting changing safety, security and regulatory requirements; and ensuring worker readiness and compliance management while maintaining operational efficiency remains a key challenge.

Introduction

Companies in the Liquefied Natural Gas (LNG) industry have unique workforce requirements. They must make intelligent operational decisions in order to improve the safety of plant and personnel, to boost their productivity, ensure compliance, increase resource utilization, and at same time be able to control labor costs.

The specific requirements for LNG companies include:

- Train and certify plant staff to do their jobs the right and safe way
- Equip workers with inspected and compliant Personal Protective Equipment (PPE)
- Ensure personnel have appropriate access authorization
- Capture accurate clock in/out data
- Make sure contractors are duly managed and accountable
- Determine if employees are fit for work
- Implement effective fatigue management
- Maintain reliable mustering control

Workforce operational challenge

LNG sites face a host of workforce-related challenges, and frequently rely on manual efforts and processes, which can lead to an increase in safety incidents and non-compliance—resulting in penalties, reduced work hours and financial losses.

Typical issues range from worker data contained in multiple, non-integrated systems or isolated in disparate silos, to duplication of manual data entry using paper-based tools, difficulty in performing validation checks, and lost time in approval processes.

LNG businesses often lack real-time enforcement of company policies and compliance status, and don't receive immediate notification of non-compliance. They also suffer from a loss of on-site productivity by employees, not to mention excess work hours billing by contractors.

Access to some LNG sites is inadequately controlled, while plant managers can only do basic mustering with limited functionality. Their efforts rely on non-integrated point solutions. Customized software for these

applications is costly and tedious to maintain, with limited functionality.

Leveraging digitization solutions

LNG companies are now collaborating with leading automation suppliers like Honeywell to leverage the power of digitization to better manage their industrial workforce. Honeywell's advanced, integrated Digitized Workforce Management (DWM) solution is designed to improve safety, compliance and productivity of employees, contractors and visitors.

Honeywell's end-to-end workforce management offering features seamless integration with the Honeywell EIS access control system, as well as Enterprise Resource Planning (ERP) and Human Resource Management Systems (HRMS). Users can deploy a secure, web-based system enabling easy access to multiple stakeholders and driving visibility and measurability to a single pane of glass (SPG).

Honeywell's comprehensive approach encompasses:

- Contractor Management
 - Contractor on-boarding and off-boarding
 - Group mobilizations and inductions for shutdowns/turnarounds
 - Rationalize contract workforce
- Access Management
 - Visitor management
 - Approval workflow process for access to site/area
 - Lost card/temporary card issue process
 - Certification confirmation prior to site access
- Time and Attendance
 - Integrate HRMS, payroll and contractor systems with access control for time on-site reporting
 - Reconcile contractor work hours for shutdowns and service orders
- Compliance Management
 - Training, certifications, licenses, and purchase orders automatically checked for each worker
 - Fitness for work checks (drug and alcohol)
- Fatigue Management
 - Time on site management
 - Exposure management
 - Minimum rest rules
 - Fitness for work checks
- Mustering
 - Real-time count of people mustered at each location
 - Quick reconciliation of people on site and mustered
 - Gas monitoring integration for GPS location and man down events
 - Last known location of people not accounted

- Key Performance Indicators (KPIs) /Reporting
 - Standard configured reports
 - Sensitive information protected through robust security restrictions
 - KPI metrics tracking
 - Reporting distributed across departments

Value Proposition for LNG companies

By employing Honeywell's innovative solution to digitize workforce management, LNG operators can address a wide range of workforce-related needs. They're able to:

- Reduce site-mustering time from hours to minutes
- Implement real-time compliance status monitoring and enforcement
- Improve compliance through fatigue monitoring and random substance testing
- Increase productivity with time-on-site monitoring
- Reduce overbilling of contract work hours
- Ensure efficient visitor management
- Enact smart on-boarding for employees and contractors

Honeywell's integrated solution enables high-risk LNG operations to improve compliance visibility anywhere, anytime—even in field. Site operators can reduce the risk of penalties and reputational damage through increased compliance and a lower probability of safety incidents. They can also achieve an 80 percent reduction in mustering time.

LNG firms with a large workforce can reduce the time and effort for Health, Safety and Environment (HSE) administration by up to 40 percent compared to offline systems. This includes a 30 percent reduction in inspection time for PPE and other safety devices.

For companies with a distributed workforce, Honeywell's digitized solutions can save time in compliance management, and minimize lost work hours and penalties due to non-compliant workers.

Conclusion

Leverage the power of digitization with DWM. An advanced, integrated end-to-end workforce management solution to manage Safety, Security, Compliance & productivity of workforce. Honeywell DWM automates business processes and operational efficiency with real time data visibility and alerts reducing the administrative load of the HSE, security & operations team. With intelligent software and configurable business rules, you can gain new insights on personnel & asset movements throughout the facility.

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Delfin advances newbuild FLNG project

At the end of October, Delfin Midstream entered into new agreements for front-end design and engineering work (FEED) for its newbuilding FLNG project with Samsung Heavy Industries (SHI) and Black & Veatch.

Delfin started co-operating with both SHI and Black & Veatch in 4Q18 and successfully completed a pre-FEED study for an FLNG in the first half of this year.

In parallel, the parties have been developing a term sheet for a lumpsum, turnkey engineering, procurement, construction, installation and commissioning contract (LSTK EPCIC) for the unit's construction and completion.

Delfin said that the company and its partners were on-track for completion of the engineering work, including a fully termed LSTK EPCIC, by the middle of 2020.

Many land-based LNG export projects seek 'economies of scale' to lower their costs by developing 10 - 20 plus mill tonnes per year projects.

However, by re-designing existing offshore pipelines and building FLNGs at efficient, low-cost Asian shipyards, Delfin can achieve total capital costs around \$500-\$550 per tonne per annum for 3.5 mill tonne FLNGs, the company claimed.

Separate development

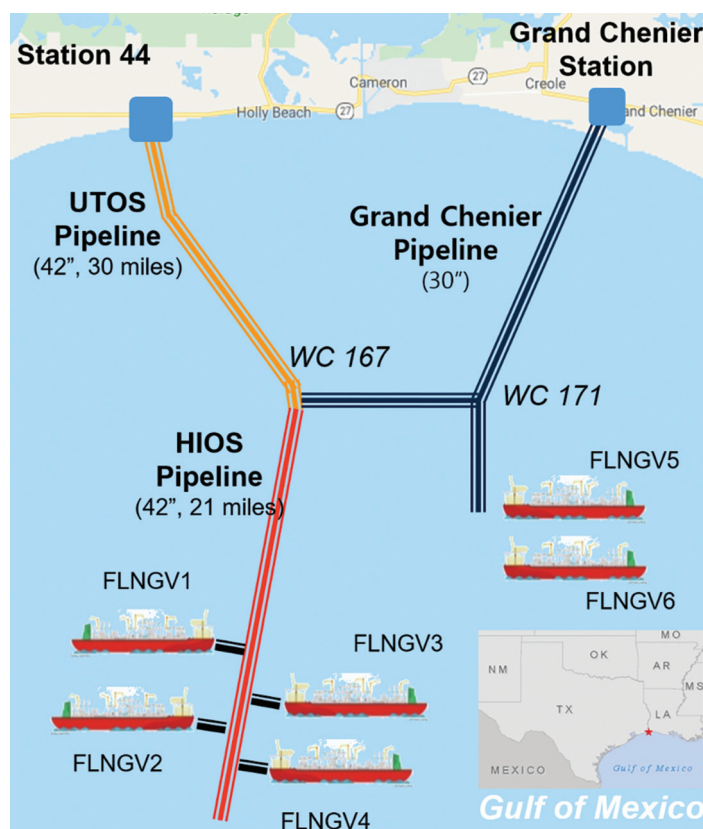
In addition, each FLNG can be developed independently with its own commercial and financial structure, which enables Delfin to offer standard HH+ or tolling models with terms of 10 to 25 years, integrated structures or joint venture arrangements with offtakers, producers and/or traders.

Delfin's existing offshore pipelines connect directly to the extensive network of onshore pipeline systems, with ample supply capacity for the first two or three FLNGs, the company said.

The company also claimed

The two most important innovations of the last 20 years... have been the shale gas revolution and the emergence of floating LNG technologies for regasification and liquefaction.

- Dudley Poston, CEO, Delfin Midstream



Delfin Midstream projects

to have the lowest costs for FID thresholds of just 2 to 2.5 mill tonnes per annum of firm offtake and with full commercial flexibility.

With four FLNG slots at the Delfin project for a total of 13 mill tonnes of LNG export and with up to eight mill tonnes per annum expansion potential with the Avocet project, the company claimed to offer large scale LNG production at the bottom-end of the cost curve.

Commenting on Delfin's progress, CEO, Dudley Poston, said: "The two most important innovations of the last 20 years in the global gas market have been the shale gas revolution and the

emergence of floating LNG technologies for regasification and liquefaction. Delfin combines these two innovations to offer the LNG market a low cost, simple and flexible LNG supply solution.

"Having completed permitting work with a positive 'Record of Decision' from the (US) Maritime Administration and a 13 MTPA non-FTA DoE export licence, Delfin's successful technical co-operation with the two leaders in floating liquefaction, SHI and Black & Veatch, make the Delfin project one of the most advanced projects in the second wave," he said.

Babcock continues gas sector growth

Babcock's LGE business has celebrated its 26th order this year from South Korean and Chinese shipyards.

The contracts thus far this year totalled 16 in the LPG carrier market, plus a further 10 ecoSMRT contracts for LNGCs.

These included several LPG Fuel Gas Supply System (ecoFGSS) contracts.

Recently contracted to deliver ecoFGSS for six LPG carriers in a range of sizes, including the world's first new-build system, Babcock's LGE business is claimed by the company to dominate the sector whilst maintaining LPG and LNGC market share.

Using LPG as a fuel supports shipowners in compliance with global environmental legislation and reduces a ship's environmental footprint, Babcock said.

Neale Campbell, Babcock's LGE business Managing Director, said: "These contract wins cement Babcock as the preferred supplier of key equipment within the liquid gas market in South Korea and China.

"Babcock LGE continues to focus on the LPG and LNG carrier markets, and increasingly on adjacent markets including ethane, ethylene, small-scale LNG and bunker vessels, Fuel Gas Supply Systems and other alternative fuels," he explained.

LNG rate assessments

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

USD/Day	This week	Change
East of Suez	\$122,500	-\$7,500
West of Suez	\$112,500	-\$7,500
1 Year T/C	\$81,000	-\$1,000

Source: Fearnleys (13/11/19)

Sandvik sees success in LNGC sector

Bridge electronics repair and maintenance specialists Sandvik has seen recent success in the LNGC sector.

Around 80% of the vessels recently attended by the company's technicians operate in the gas sector.

For example, Sandvik has contracts with BW Gas (BW Fleet Management), Golar, Solvang and Wilhelmsen Kuala Lumpur (Ship Management) with many of the ships on long term maintenance deals.

Among the ships attended recently were the 'BW Prince'

in Bahia Blanca, 'River Orashi' in Singapore, 'Golar Viking', off port limits Gibraltar (10 hours) and 'LNG Enugu' at Dahej (India). Another LNGC had her radar repaired while at Suape in Brazil.

Sandvik offers long term deals by way of shore-based maintenance (SBM) and fleet agreements. Around 125 vessels have taken advantage of this service, whereby the equipments' condi-

tion is monitored enabling any repairs or services to be undertaken before problems arise.

Official agent

Sandvik is also the official agent for JRC equipment through Alpha-tron and has technicians trained to maintain and repair the bridge equipment. The company also undertakes Furuno equipment training in Spain.

The company also visits vessels

at Panama and Singapore from a local office in each area manned by technicians, although technicians were available 24/7 worldwide as necessary.

Sandvik's World Service Manager, John King, told LNG Shipping News that bridge electronic technicians were difficult to come by and that the necessary training was proving expensive, a cost that could not be passed onto the customer. ■

NEWS NUDGE

New Chinese receiving terminal planned

Suntien Green Energy plans to build an LNG receiving terminal in northern China have been granted state approval.

The company is a Chinese wind power producer and piped gas distributor backed by the Hebei provincial government.

It plans to make an initial investment of \$1.15 bill in a first-stage receiving terminal, capable of handling 5 mill tonnes per annum of LNG by the end of 2022.

Eventually, the terminal's capacity will be increased to 12 mill tonnes per year.

The terminal will reportedly be comprised of eight storage

tanks giving 200,000 cu m capacity, and a berth suitable for LNGCs with capacities from 80,000 to 266,000 cu m.

Suntien claimed that it will finance the project with its own capital, supplemented with loans from financial institutions.

Perusahaan Gas Negara signs Sinopec LNG supply deal

Indonesia's gas distribution company, PT Perusahaan Gas Negara (PGN), is to sell LNG to China's Sinopec next year.

Sinopec required shipments of at least six LNG cargoes in 2020, PGN Director Syahrial Mukhtar told Reuters.

The first shipment is expected in early January.

PGN expects to source the LNG from both domestic gas fields and overseas, including from parent company's PT Pertamina's gas fields, it said.

Poland to charter LNGCs next year

Poland's state-owned oil & gas company PGNiG is believed to be close to signing agreements with two or more shipping lines for the staggered charters on about six LNGCs.

These vessels will ship LNG contracted on a free-on-board (FOB) basis from Sempra Energy's Port Arthur and Venture Global

LNG's Calcasieu and Plaquemines projects.

'LNG Dubhe' on her way to Europe

The first of four conventional LNGCs ordered for the Yamal LNG project was delivered earlier this month.

Ordered by MOL and China COSCO Shipping Corp, the 'LNG Dubhe' was handed over by Hudong-Zhonghua Shipbuilding.

She was due to arrive at Singapore on 13th November, according to VesselFinder.

Initially, 'LNG Dubhe' will ship Yamal LNG from European transshipment terminals or at a ship-to-ship cargo transfer location. ■

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WORLD LNG CARRIER ORDERBOOK

Name	Delivery	Capacity	Propulsion	Containment	Primary Owner	Yard	Ordered
Energy Universe	01/08/2019	165000	TFDE	SPB	MOL	Japan Marine United	01/02/2014
Georgiy Ushakov	11/09/2019	172000	TFDE - Azipod	GT NO 96	Teekay LNG	DSME	01/07/2014
Nikolay Urvantsev	15/07/2019	172410	TFDE - Azipod	GT NO 96	MOL	DSME	01/07/2014
Yakov Gakkel	25/10/2019	172000	TFDE - Azipod	GT NO 96	Teekay LNG	DSME	01/07/2014
Marvel Pelican	15/12/2019	155000	TFDE	Moss	MOL	Kawasaki	01/09/2014
Marvel Heron	20/09/2019	177000	STaGE	Moss	MOL	Mitsubishi H.I.	01/01/2015
Marvel Swan	15/10/2021	178000	MEGI		K-Line	Imabari	15/05/2015
BW Pavilion Aranda	10/09/2019	173400	MEGI	GT NO 96	BWGas	DSME	01/09/2015
Daewoo 2466	15/10/2019	173400	MEGI	GT NO 96	Maran Gas Maritime	DSME	01/06/2016
Daewoo 2467	15/10/2019	173400	MEGI	GT NO 96	Maran Gas Maritime	DSME	01/06/2016
Gaslog Windsor	15/04/2020	180000	XDF	GTT Mark III Flex	GasLog	Samsung	01/09/2016
Daewoo 2469	01/04/2020	173400	MEGI	GT NO 96	Maran Gas Maritime	DSME	16/12/2016
Rias Baixas Knutsen	15/07/2019	180000	MEGI	GTT Mark III Flex	Knutsen	Hyundai	01/03/2017
Flex Courageous	15/08/2019	173400	MEGI	GT NO 96	Flex LNG	DSME	02/03/2017
MOL Hudong-Zhonghua 1/4	15/12/2019	174000	MEGI	GT NO 96	MOL	Hudong-Zhonghua	01/07/2017
MOL Hudong-Zhonghua 2/4	01/03/2020	174000	MEGI	GT NO 96	MOL	Hudong-Zhonghua	01/07/2017
MOL Hudong-Zhonghua 3/4	15/07/2020	174000	MEGI	GT NO 96	MOL	Hudong-Zhonghua	01/07/2017
MOL Hudong-Zhonghua 4/4	01/10/2020	174000	MEGI	GT NO 96	MOL	Hudong-Zhonghua	01/07/2017
Gaslog Warsaw	15/07/2019	180000	XDF	GTT Mark III Flex	GasLog	Samsung	01/12/2017
Daewoo 2478	15/05/2020	173400	MEGI	GT NO 96	Maran Gas Maritime	DSME	06/12/2017
Elisa Larus	30/03/2020	174000	XDF	GTT Mark III Flex	NYK	Hyundai	01/01/2018
SHI #1	15/07/2020	174000	XDF	GTT Mark III Flex	Cardiff Marine	Samsung	01/01/2018
SHI #17	15/10/2020	174000	XDF	GTT Mark III Flex	Cardiff Marine	Samsung	01/01/2018
HHI / Total	15/01/2020	174000	XDF	GTT Mark III Flex	Cardiff Marine	Hyundai	04/01/2018
HHI / Total / Sovc	28/02/2020	174000	XDF	GTT Mark III Flex	Sovcomflot	Hyundai	04/01/2018
BW Magnolia	15/12/2019	173400	MEGI	GT NO 96	BWGas	DSME	01/02/2018
BW Pavilion Aramhera	15/06/2020	173400	MEGI	GT NO 96	BWGas	DSME	01/02/2018
HHI / Cardiff #1	15/02/2020	174000	XDF	GTT Mark III Flex	Cardiff Marine	Hyundai	01/02/2018
HHI / Cardiff #2	15/04/2020	174000	XDF	GTT Mark III Flex	Cardiff Marine	Hyundai	01/02/2018
Flex Reliance	15/07/2020	173400	MEGI	GT NO 96	Flex LNG	DSME	28/02/2018
Flex Resolute	15/08/2020	173400	MEGI	GT NO 96	Flex LNG	DSME	28/02/2018
Flex Amber	15/07/2020	174000	XDF	GTT Mark III Flex	Flex LNG	Hyundai	01/03/2018
Flex Aurora	15/05/2020	174000	XDF	GTT Mark III Flex	Flex LNG	Hyundai	01/03/2018
SHI Gaslog #1	15/04/2020	180000	XDF	GTT Mark III Flex	GasLog	Samsung	01/03/2018
Samsung 2271	15/04/2020	174000	XDF	GTT Mark III Flex	Cardiff Marine	Samsung	09/03/2018
DSME Minerva #1	15/01/2021	173400	MEGI	GT NO 96	Minerva Marine	DSME	15/03/2018
DSME Minerva #2	15/04/2021	173400	MEGI	GT NO 96	Minerva Marine	DSME	15/03/2018
Traiano Knutsen	15/06/2020	180000	MEGI	GTT Mark III Flex	Knutsen	Hyundai	23/03/2018
DSME 2483	15/08/2020	173400	MEGI	GT NO 96	Alpha Gas	DSME	28/03/2018
DSME 2484	01/12/2020	173400	MEGI	GT NO 96	Alpha Gas	DSME	28/03/2018
SHI Gaslog #2	15/07/2020	180000	XDF	GTT Mark III Flex	GasLog	Samsung	30/05/2018
DSME 2487	15/01/2021	173400	MEGI	GT NO 96	Maran Gas Maritime	DSME	05/06/2018
Maran Gas DSME	15/09/2020	173400	MEGI	GT NO 96	Maran Gas Maritime	DSME	05/06/2018
DSME 2485	15/04/2021	173400	MEGI	GT NO 96	Alpha Gas	DSME	07/06/2018

DFDE = dual fuel diesel engines, STRH = steam turbine reheat / ultra steam turbine, MEGI = marine electric gas injection, DRL = slow speed diesel, FSRU = vessel with regas capacity, FLNG = floating LNG production unit
Data last updated = 6th August 2019

Name	Delivery	Capacity	Propulsion	Containment	Primary Owner	Yard	Ordered
Cool Discoverer	15/08/2020	174000	XDF	GTT Mark III Flex	Thenamaris	Hyundai	19/06/2018
Flex Vigilant	15/03/2021	174000	XDF	GTT Mark III Flex	Flex LNG	Hyundai	30/06/2018
Flex Volunteer	15/11/2020	174000	XDF	GTT Mark III Flex	Flex LNG	Hyundai	30/06/2018
Aristarchos	15/03/2021	174000	XDF	GTT Mark III Flex	Capital Gas	Hyundai	01/07/2018
Aristidis I	15/11/2020	174000	XDF	GTT Mark III Flex	Capital Gas	Hyundai	01/07/2018
Aristos I	15/10/2020	174000	XDF	GTT Mark III Flex	Capital Gas	Hyundai	01/07/2018
Attalos	15/06/2021	174000	XDF	GTT Mark III Flex	Capital Gas	Hyundai	01/07/2018
Flex Freedom	15/10/2020	173400	MEGI	GT NO 96	Flex LNG	DSME	05/07/2018
Celcius #1	15/10/2020	180000	XDF	GTT Mark III Flex	Celcius Shipping	Samsung	01/08/2018
Celcius #2	15/12/2020	180000	XDF	GTT Mark III Flex	Celcius Shipping	Samsung	01/08/2018
HHI 3037	15/09/2020	174000	XDF	GTT Mark III Flex	Cardiff Marine	Hyundai	15/08/2018
SHI 2300	15/10/2020	174000	XDF	GTT Mark III Flex	GasLog	Samsung	15/08/2018
SHI 2301	15/12/2020	174000	XDF	GTT Mark III Flex	GasLog	Samsung	15/08/2018
HHI 3038	15/11/2020	174000	XDF	GTT Mark III Flex	Cardiff Marine	Hyundai	15/09/2018
Cool Racer	15/01/2021	174000	XDF	GTT Mark III Flex	Thenamaris	Hyundai	27/09/2018
SHI NYK	15/04/2021	174000	XDF	GTT Mark III Flex	NYK	Samsung	28/09/2018
SHI Minerva #1	15/01/2021	174000	XDF	GTT Mark III Flex	Minerva Marine	Samsung	15/10/2018
HHI 3039	15/03/2021	174000	XDF	GTT Mark III Flex	Cardiff Marine	Hyundai	15/11/2018
HHI 3112	15/01/2021	174000	XDF	GTT Mark III Flex	Cardiff Marine	Hyundai	15/11/2018
HHI Latsco #1	15/02/2021	174000	XDF	GTT Mark III Flex	Latsco Shipping	Hyundai	25/11/2018
HHI Latsco #2	15/08/2021	174000	XDF	GTT Mark III Flex	Latsco Shipping	Hyundai	25/11/2018
SHI 2306	15/09/2021	174000	XDF	GTT Mark III Flex	NYK	Samsung	03/12/2018
SHI 2307	15/11/2021	174000	XDF	GTT Mark III Flex	NYK	Samsung	03/12/2018
DSME 2496	15/02/2021	174000	MEGI	GT NO 96	BWGas	DSME	05/12/2018
DSME 2497	15/06/2021	174000	MEGI	GT NO 96	BWGas	DSME	05/12/2018
DSME 2495	15/05/2021	173400	MEGI	GT NO 96	Nakilat	DSME	10/12/2018
HHI NYK DG #1	15/09/2020	174000	XDF	GTT Mark III Flex	NYK	Hyundai	11/12/2018
HHI NYK DG #2	15/05/2021	174000	XDF	GTT Mark III Flex	NYK	Hyundai	11/12/2018
HHI NYK DG #3	15/06/2021	174000	XDF	GTT Mark III Flex	NYK	Hyundai	11/12/2018
DSME Dec #1	15/12/2020	180000	MEGI	GT NO 96	MOL	DSME	15/12/2018
DSME Dec #2	15/02/2021	180000	MEGI	GT NO 96	MOL	DSME	15/12/2018
SHI Navigare	15/03/2021	173400	XDF	GTT Mark III Flex	Navigare	Samsung	15/12/2018
HHI Sovcom #1	30/08/2020	174000	XDF	GTT Mark III Flex	Sovcomflot	Hyundai	19/12/2018
HHI Sovcom #2	15/12/2020	174000	XDF	GTT Mark III Flex	Sovcomflot	Hyundai	19/12/2018
Alpha Gas	15/06/2021	174000	MEGI	GT NO 96	Alpha Gas	DSME	27/12/2018
SHI Gaslog CE #1	15/06/2021	180000	XDF	GTT Mark III Flex	GasLog	Samsung	27/12/2018
SHI Gaslog CE #2	15/08/2021	180000	XDF	GTT Mark III Flex	GasLog	Samsung	27/12/2018
SHI #18	15/03/2021	174000	XDF	GTT Mark III Flex	Cardiff Marine	Samsung	31/12/2018
Celcius #3	15/02/2021	180000	XDF	GTT Mark III Flex	Celcius Shipping	Samsung	15/01/2019
Celcius #4	15/04/2021	180000	XDF	GTT Mark III Flex	Celcius Shipping	Samsung	15/01/2019
SHI Minerva #2	15/09/2021	174000	XDF	GTT Mark III Flex	Minerva Marine	Samsung	15/01/2019
CSSC #1	15/09/2021	178000	XDF	GT NO 96	CSSC	Hudong-Zhonghua	30/01/2019
CSSC #2	15/02/2022	178000	XDF	GT NO 96	CSSC	Hudong-Zhonghua	30/01/2019
DSME Maran	15/05/2021	174000	MEGI	GTT Mark III Flex	Nakilat	DSME	15/02/2019
Samsung Feb #1	15/03/2022	174000	XDF	GTT Mark III Flex		Samsung	15/02/2019

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 = 6th August 2019

Name	Delivery	Capacity	Propulsion	Containment	Primary Owner	Yard	Ordered
Samsung Feb #2	15/03/2022	174000	XDF	GTT Mark III Flex		Samsung	15/02/2019
Samsung Feb #3	15/03/2022	174000	XDF	GTT Mark III Flex		Samsung	15/02/2019
Capital Gas #5	15/07/2021	174000	XDF	GTT Mark III Flex	Capital Gas	Hyundai	25/02/2019
DSME Maran #2	15/08/2021	173400	XDF	GTT Mark III Flex	Nakilat	DSME	25/02/2019
DSME Maran #3	15/10/2021	173400	XDF	GTT Mark III Flex	Nakilat	DSME	25/02/2019
SHI Mar19	15/03/2022	174000	XDF	GTT Mark III Flex	Nisshin Shipping	Samsung	20/03/2019
DSME Maran 2504	15/01/2022	174000	MEGI	GT NO 96	Maran Gas Maritime	DSME	01/04/2019
H Samho NYK	15/03/2022	174000	XDF	GTT Mark III Flex	NYK	Hyundai	01/04/2019
HHI Samho Edison	15/01/2022	174000	XDF	GTT Mark III Flex	NYK	Hyundai	10/04/2019
Capital Gas #6	15/09/2021	174000	XDF	GTT Mark III Flex	Capital Gas	Hyundai	15/04/2019
Samsung N/A	15/01/2022	174000	XDF	GTT Mark III Flex	Minerva Marine	Samsung	01/05/2019
DSME May19	15/05/2022	174000	MEGI	GT NO 96	Maran Gas Maritime	DSME	14/05/2019
DSME MOL #3	15/07/2021	173400	MEGI	GT NO 96	MOL	DSME	15/05/2019
Hyundai European #1	15/03/2022	180000	XDF	GTT Mark III Flex	Dynagas	Hyundai	22/05/2019
Hyundai European #2	15/06/2022	180000	XDF	GTT Mark III Flex	Dynagas	Hyundai	22/05/2019
Samsung 2019 #10	15/06/2022	174000	XDF	GTT Mark III Flex	Morgan Stanley	Samsung	08/06/2019
Samsung 2019 #9	15/01/2022	174000	XDF	GTT Mark III Flex	Morgan Stanley	Samsung	08/06/2019
HHI SK E&S	15/09/2021	180000	XDF	GTT Mark III Flex	SK Shipping	Hyundai	10/07/2019

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 = 6th August 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	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
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 = 3rd October 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 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
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	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	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	Q-LNG 4000	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	Elenger TBN	6,000	LNG	NWE	Yes	Elenger
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
2022	PNE TBN	5,400	LNG	USG	Yes	PNE
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 = 3rd October 2019