

LNG Shipping News

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16 September 2021

Trinidad and Tobago to dominate Americas' production

Trinidad and Tobago is expected to contribute around 25%, or 820 mill cu ft per day, of the Americas natural gas production in 2025.

The figures were taken from planned and announced projects, analytical research company GlobalData revealed.

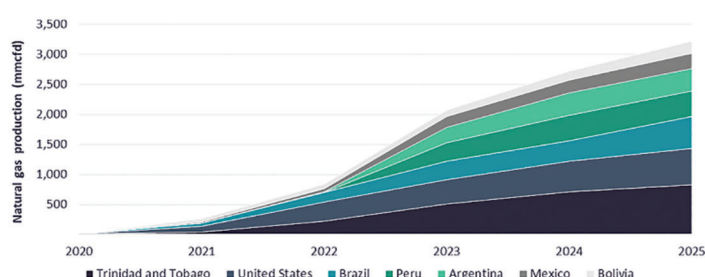
GlobalData's report, 'Americas Oil and Gas Upstream Development Outlook to 2025', said that 514 mill cu ft per day of Trinidad and Tobago's natural gas production in 2025 is expected from planned projects with identified development plans, while 306 mill cu ft is predicted from early-stage announced projects that are undergoing conceptual studies and expected to be granted development approval.

Seven natural gas projects are forecast to start operations in the country during 2021/2025. Of these, Colibri and Matapal are among the key projects that could collectively contribute around 58% of its natural gas production in 2025.

Svetlana Doh, GlobalData's Oil & Gas Analyst, said: "Despite quite a positive outlook for the country's production in the near term, GlobalData projects that natural gas output in Trinidad and Tobago will start declining after 2024.

"Since most of the developed and undeveloped shallow water blocks are already licensed, more aggressive exploration work needs

Natural gas production outlook from planned and announced projects by key countries (mmcf), 2021-2025



Source: GlobalData, Oil & Gas Intelligence Center

GlobalData.

to be conducted regarding deep-water acreage.

"The country offered some deepwater blocks in the 2020 deepwater competitive bid round, but the round was delayed until 2021. Further delays could be expected due to the sudden death of Trinidad and Tobago's energy minister in April, 2021," she said.

US comes second

GlobalData identified the US as the Americas' second largest country with 608 mill cu ft per day of natural gas production in 2025, or around 18% of its natural gas production for the year, excluding the US L48.

Brazil followed with natural gas production of 538 mill cu ft predicted from planned and announced projects in 2025.

Among oil and gas companies,

BP, China National Petroleum (CNP), and Petroleo Brasileiro (Petrobras) lead with the highest natural gas production of 421 mill, 412 mill and 387 mill cu ft per day, respectively.

GlobalData has also forecast that natural gas production in the US and Canada is expected to see 12% growth by 2025, compared to 2021 levels.

However, Mexico, is forecast to suffer a domestic natural gas production fall by as much as 28% from 2021 to 2025.

Mexican demand for natural gas is growing significantly and the country will have to increase its reliance on imports from the US to avoid supply shortages.

Exports from the US to other regions, mainly Asian countries, has grown by 40% in 2021 thus far, compared to 2019.

ies and is preparing the Detailed Feasibility Report (DFR) for a 4 mill tonnes per annum FSRU, followed by a pre-feasibility report for a 5 mill tonnes land-based terminal, which could follow at a later date.

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NEWS NUDGE

Petronet mulls East Coast import terminal

Major Indian LNG importer, Petronet is planning a third import facility to be located on the Eastern side of the country.

In its Annual Report, Chairman Tarun Kapoor said that the company intends to deploy an FSRU at Gopalpur in Odisha state.

He revealed that Petronet had completed the pre-project stud-

Tight winter market ahead - Poten & Partners

There will be a tight, seasonal shipping market this winter, Jefferson Clarke, Poten & Partners head of LNG Analytics forecast.

He said that the main market fundamentals going forward would be the weather, Panama Canal transit restraints, newbuilding price hikes and the approaching IMO regulations on energy efficiency and carbon index reporting.

Currently, LNG demand remains strong in China, Latin America and South Korea. However, Europe was well below 2019 levels and the storage draw down last winter has not been replaced, which could cause problems this winter.

He stressed that looking ahead, ambient temperatures would be the short term wild card, as a bad northern Hemisphere winter will lead to increased demand, resulting in extra shipments being needed.

At present, there is very little spot LNGCs available, which have helped rates remain above the \$60,000 per day mark. Of course,

the question is - how far will the current spike in LNG prices go?

More charterers are now looking for term business, resulting in the large orderbook, which contains speculative contracts ordered during the past two to three years, seeing uncommitted LNGCs decline in numbers.

Clarke said that more charterers were looking for six months to three years period business. He explained that charterers needed to book tonnage ahead, due to the longer tonne/miles created by increasing US exports to Asia, especially using the Cape and Suez routes.

Newbuilding prices were also increasing, based on rising demand and the lack of newbuilding slots, due to the massive hike in containership ordering recently.

He also explained that the recent decline in exports was mainly



Panama Canal transit constraints are having an affect on LNGC rates

due to some major players having supply issues and not due to a drop in demand.

During the first half of this year, US exports to Asia increased by around 92 cargoes or 80%, compared with the previous year. However, due to the Panama Canal constraints, voyages via the Cape of Good Hope and the Suez Canal increased by 7% and 17%, respectively.

Clarke explained that even with the reservation and a slot auction system in place, the maximum number of LNGCs able to transit the Panama Canal is only four per day.

He said that at 14.5 knots a US Gulf/Japan round trip would take around 58 days, compared with 95 days via South Africa. This equates to 2.7 vessels for every million tonnes of LNG via Panama and 3.4 vessels via the Cape. ■

Ras Laffan becomes Green Award member

Qatar Petroleum's (QP) Ras Laffan Port, located in Ras Laffan Industrial City, has become the first port in the Arabian Gulf to join the international Green Award network.

This will result in Ras Laffan becoming an incentive provider for Green Award certified LNGCs.

QP and the Green Award Foundation have worked closely to introduce this incentive to reward and recognise the efforts and investments of LNGCs that are adopting the latest environmental standards, the organisations said.

Green Award is a platform that organises an international network of over 150 incentive providers that offer a wide range of benefits to its certifi-

cate holders.

With more than 1,000 LNGCs calling at Ras Laffan annually, its track record in promoting environmentally sustainable practices in shipping has been well established since its inception in 1996.

Since then, Ras Laffan has worked closely with Qatargas to support the certification of its LNG shipping fleet.

His Excellency, Saad Sherida Al-Kaabi, the Minister of State for Energy Affairs, QP President and CEO, described this as "another landmark in Qatar Petroleum's

long standing commitment to environmentally sustainable practices in its operations."

Minister Al-Kaabi added: "Through the Green Award for shipping, we are also building upon QP's track record of providing environmentally friendly energy by supporting sustainable practices in shipping as well."

Certified LNGC operators under the Green Award scheme will now be offered a discount on port dues, making Ras Laffan Port the first in the region to do so.

Jan Fransen, Green Award

Foundation's Executive Director, said; "Ras Laffan Port is the first port in the Arabian Gulf to join the Green Award Foundation as an incentive provider. We appreciate the continued co-operation we have with Qatar, as Qatargas was involved in the setup of our ship certification programme for LNG carriers in 2011, which later included LPG carriers as well.

"We welcome Ras Laffan Port's support to protect the marine environment which the Green Award has been pursuing for over 27 years," he said. ■

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Major Australian merger moves closer

Santos and Oil Search have entered into a Merger Implementation Deed (MID), under which the two companies will merge via an Oil Search Scheme of Arrangement.

This announcement followed both companies completing reciprocal confirmatory due diligence, which commenced on 6th August, 2021.

Under the terms of the merger, Oil Search shareholders will receive 0.6275 new Santos shares for each Oil Search share held on the record date of the Scheme of Arrangement. Once finalised, Oil Search shareholders will own around 38.5% of the merged entity and Santos shareholders will own about 61.5%.

Oil Search's Board unanimously recommended that its shareholders vote in favour of the merger.

The combination of the two companies will create a regional LNG giant with the following features:

- Diversified portfolio of long-life, low-cost assets across Australia, Timor-Leste, Papua New Guinea and North America with significant growth potential.
- Pro-forma market capitalisation of around A\$21 bill, which would position the merged

entity in the top 20 ASX-listed companies and also in the 20 of the world's largest global oil and gas companies.

- Pro-forma 2021 production of about 116 mill barrels of oil equivalent.
- Pro-forma 2P+2C resource base of 4,867 mill barrels of oil equivalent.
- Investment grade balance sheet with more than US\$5.5 bill of liquidity to self-fund development projects, whilst maintaining further optionality and flexibility to optimise the portfolio.
- Target gearing of less than 30%.
- Strong ESG credentials, including maintaining Santos' net-zero emissions target by 2040, plus a focus on carbon capture and storage projects and Oil Search's social and community investment in Papua New Guinea and North America.
- Santos expects the merger to unlock pre-tax synergies of US\$90-115 mill per annum

(excluding integration and other one-off costs), thus creating value for both sets of shareholders. Santos claimed an excellent track record of integration and recently merged Quadrant Energy's WA and ConocoPhillips' NT business units into Santos, delivering more than US\$160 mill in annual synergies.

- The merger is expected to create greater alignment in Papua New Guinea supporting the development of key projects, including Papua LNG, delivering new jobs, helping to support the local economy, and continuing to support the development of and investment in PNG.

The newly merged company will be led by Santos Managing Director and CEO, Kevin Gallagher, who said: "Santos and Oil Search will be stronger together and will have increased scale and capacity to drive a combined disciplined, low-cost operating model and unrivalled growth opportunities over the next decade."



Santos' Kevin Gallagher is to head up the merged company

"The merger will create a company with a balance sheet and strong cash flows necessary to successfully navigate the transition to a lower carbon future with the combination of Santos' leading CCS capability combining with Oil Search's ESG programmes in PNG and Alaska to provide a strong foundation," he said.

Following the merger's completion, three non-executive directors from Oil Search will join the Santos Board. Santos' head office will remain in Adelaide. ■

Vietnam to import LNG in 2022

Vietnam aims to start importing LNG next year, according to a senior government minister.

LNG is seen among the solutions for lowering carbon emissions and ensuring the country's energy security, Vietnam's Minister of Industry and Trade, Nguyen Hong Dien, said.

"With the goal to start importing LNG in 2022, import demand will increase to about 5 mill tonnes of LNG in 2025, 10 mill by 2030 and 15 mill tonnes by 2035," Dien said in a pre-recorded video address ahead of the Japan-hosted 10th LNG Producer-Consumer Conference to be held on 5th October.

"Vietnam is currently conducting research, searching for markets and accelerating construction of terminal infrastructure to be ready to receive and import LNG," he said, according to newswires.

The Son My LNG project, Vietnam's largest LNG-to-power project, has been approved by the Vietnamese Government and "many other projects proposed by foreign enterprises are under consideration," Dien added.

Vietnam is counting on both LNG imports and developing new gas resources to compensate for declining domestic production to ensure its gas supply, Dien said, adding this was detailed in the Vietnam Energy Development Strategy to 2030 with a vision to 2050 and the Vietnam Energy Master Plan.

Declining resources

Given the signs that its domestic coal, oil and natural gas resources were depleting, the government

has set a target of boosting development of renewable and sustainable energy resources, Dien said.

Vietnam is viewing current pandemic-led challenges as "an opportunity" to review its traditional energy supply model and promote "a sustainable energy transition" under the Paris Agreement, he said.

"Vietnam believes that LNG plays an important role in helping the world solve the problem of climate change," he continued, citing it as a cleaner fuel than fuel oil and diesel.

Vietnam's Ministry of Natural Resources and Environment is drafting a decree to reduce greenhouse gas emissions (GHG) in accordance with the country's commitments set out in its Nation-

ally Determined Contribution (NDC) to implement the 2015 Paris Agreement that will be signed by Prime Minister, Pham Minh Chinh and come into force on 1st January, 2022.

Under its updated NDC submitted to the UN Framework Convention on Climate Change in September, 2020, Vietnam targeted reducing GHG emissions by 9%, or 83.9 mill tonnes of CO₂ equivalent, by 2030 from its 'business-as-usual' scenario.

Around 51.5 mill tonnes of CO₂e or 61.4% of the total will be reduced in the energy sector, 9.3 mill in land-use changes and forestry, 9.1 mill in waste treatment, 7.2 mill tonnes in industrial processes and 6.8 mill tonnes in agriculture. ■

Poland to receive more US LNG

PGNiG (Polish Oil and Gas Co) is to purchase an additional 2 mill tonnes per annum of LNG from Venture Global for 20 years.

Cargoes will be supplied from Venture Global's Calcasieu Pass LNG and Plaquemines LNG export facilities.

The documents were signed during a ceremony at the Warsaw Stock Exchange earlier this month.

"Venture Global is proud to expand our existing partnership with PGNiG to provide a clean and reliable supply of American LNG to Poland. Since 2018, our two companies have significantly increased our co-operation, nearly tripling the volume of LNG Venture Global will export to PGNiG.

"Poland will lower its carbon footprint and diversify its energy

mix by incorporating more American natural gas into its portfolio. Pivoting towards cleaner natural gas from the US will not only increase Poland's energy security but also decrease its carbon emissions, and Venture Global looks forward to supporting our partner PGNiG in these efforts for years to come," said Mike Sabel, Venture Global LNG CEO.

"The import of LNG allows PGNiG to diversify sources and routes of supply of natural gas. This way we can provide Polish customers with energy security - constant and uninterrupted gas deliveries. This is

particularly important considering that natural gas will be a bridge fuel in the process of energy transition of the Polish economy.

"At the same time, access to American LNG gives us opportunity to develop trade of this fuel on the global market - for this purpose we will charter LNG carriers to transport liquefied natural gas. In this respect, we value co-operation with Venture Global LNG, as it brings us the possibility of achieving our strategic goals," added Paweł Majewski, PGNiG Management Board President.

This announcement amended the existing Sales and Purchase Agreements (SPAs) signed by the companies in 2018, increasing the volume of LNG purchased from Calcasieu Pass LNG to 1.5 mill tonnes and from Plaquemines LNG to 4 mill tonnes per annum.

This brings the total LNG volume that PGNiG has committed to purchase from Venture Global facilities to 5.5 mill tonnes per annum for 20 years on a free-on-board basis (FOB).



Poland is to import more US LNG

Specialist LNGC crew training agreement signed

PAO Sovcomflot (SCF), NOVATEK and Admiral Nevelskoy Maritime State University (MSUN) have signed a co-operation agreement to train the specialist vessel crew needed for the Arctic LNG-2 project.

This agreement was signed in Vladivostok as part of the opening of the Far Eastern Maritime Training Centre (FEMTC) based at the university.

The signing ceremony was attended by - Sergey Frank, SCF's Board Chairman and Honorary President and Chairman of MSUN's Board of Trustees; Igor Tonkovidov, SCF President and CEO; Leonid Mikhelson, NOVATEK's Chairman of the Management Board and Denis Burov, MSUN Rector.

SCF and NOVATEK said that they intended to use the University's capabilities, including its training centre, to organise both initial and advanced training, as well as re-qualification for fleet personnel for

the next-generation Arctic LNGCs, currently under construction at Zvezda Shipbuilding Complex.

Tonkovidov said: "Today, Sovcomflot and NOVATEK are joining up with the Russia's Ministry of Transport to help further develop a national system for professional maritime education, signing an agreement with Admiral Nevelskoy Maritime State University.

"This agreement will be instrumental in providing the Russian Arctic fleet with highly trained maritime personnel. New fleet delivery will create over 1,000 new jobs and will require a significant amount of qualified seafarers, given the complexity of equipment and the challenging condi-

tions of the Arctic.

"We expect to have some 300 marine specialists of our company alone undergo advanced training in this centre each year. Sovcomflot has co-operated successfully with MSUN for many years, and we value considerably the University's expertise in ice navigation.

AG&P's LNG facility receives construction permit

The Philippines Department of Energy (DOE) said that it had approved Atlantic Gulf & Pacific Company's (AG&P) permit-to-construct application for its first LNG import facility that will come online by the second quarter of next year.

Philippine Energy Undersecretary Donato Marcos said that AG&P's LNG import terminal project was the second project granted with a permit to construct, expand, rehabilitate and modify (PCERM), which represents the second layer of permitting for LNG projects in the country.

The first permit is the notice-to-proceed (NTP), which lasts for six months, but can be extended for another six months. AG&P's NTP was issued on 24th February, this year.

According to the DOE, the initial phase of AG&P's LNG project will include an FSRU; but a longer-term project plan calls for the construction of a more permanent onshore LNG terminal.

LNG will be imported for the gas-fired SMC Global Power Holdings Corp power plant developments, although DOE sources said that no definitive power supply contracts had been reported to the agency thus far.

"We also welcome the participation in this project of our long-term partner, NOVATEK, and express our gratitude for its support in this venture," he said.



Igor Tonkovidov, SCF President and CEO; Denis Burov, MSUN Rector and Leonid Mikhelson, NOVATEK's Chairman of the Management Board sign the agreement



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Falling finance costs boost Dynagas

Dynagas LNG Partners reported net income of \$9.1 mill for the three months ended 30th June, 2021, compared to \$6.4 mill in the corresponding period of 2020, an increase of \$2.7 mill, or 42.2%.

This rise was mainly attributable to the decrease in finance costs, as well as to a drop in the loss on the interest rate swap transaction entered into in May, 2020, which was slightly offset by an increase in operating and general and administrative expenses, compared to 2Q20.

Adjusted net income for 2Q21 was \$10.4 mill, compared to \$9.9 mill in the corresponding period in 2020, representing a net increase of \$0.5 mill.

Voyage revenues for both periods were \$33.9 mill. The Partnership also reported an average daily hire gross of commissions of around \$62,440 per day per vessel in 2Q21, compared with about \$62,200 in 2Q20.

Vessel operating expenses were \$7.6 mill, which corresponds to daily operating costs per vessel of \$13,945 in 2Q21, compared to \$6.9 mill, or daily operating expenses of \$12,630 per vessel in the corresponding period in 2020.

This increase was mainly due to higher crewing and supply costs in 2Q21, compared to 2Q20, due to the effects of the outbreak of the pandemic.

Adjusted EBITDA for 2Q21 was \$23.6 mill, compared to \$24.1 mill for the corresponding period in 2020.

During 2Q21, the Partnership generated net cash from operating activities of \$15.8 mill, compared to \$8.1 mill in the corresponding period in 2020, which represents an increase of \$7.7 mill, or 95.1%.

As of 30th June, 2021, Dynagas reported total cash of \$86.8 mill (including \$50 mill of restricted cash). The outstanding debt under the \$675 mill credit facility was \$591 mill, gross of unamortised deferred loan fees and including \$48 mill, which was repayable within one year.

As of 7th September, 2021, the Partnership had estimated contracted timecharter coverage for 100% of its fleet for 2021, 100% for 2022 and 95% of the available days for 2023. The estimated contracted revenue backlog was \$1.09 bill, with an average remaining contract term of 7.4 years.

CEO, Tony Lauritzen, said; "All six LNG carriers in our fleet are operating under their respective long-term charters with international gas producers with an average remaining contract term of 7.4 years.

"As of 7th September, 2021, our estimated contracted revenue backlog is approximately \$1.09 bill. We were pleased to announce on 21st April, 2021 a new two-year charter for the 'Arctic Aurora'

with Equinor, which has had the ice classed 1A and winterised vessel on continuous charter since her delivery from builders in 2013.

"After securing the charter for the 'Arctic Aurora' with Equinor, and barring any unforeseen events, the earliest contracted redelivery date for any of our six LNG carriers is in the third quarter of 2023 ('Arctic Aurora'), with the next carrier ('Clean Energy') becoming available for re-chartering in the first quarter of 2026.

"For the second quarter of 2021, we reported net income of \$9.1 mill, earnings per common unit of \$0.17, adjusted net income of \$10.4 mill, adjusted earnings per common unit of \$0.20 and adjusted EBITDA of \$23.6 mill.

"The COVID19 outbreak is still causing operational and logistical challenges for the industry. Despite these challenges, we are pleased to report 100% utilisation for our fleet for the second quarter of 2021.

"Going forward, we intend to continue our strategy of using our cash flow generation to deleverage our balance sheet and reinforce our liquidity so as to build equity value over time. This, we believe, will enhance our ability to pursue future growth initiatives," he said. ■

Barossa unit's equity JV partnership revealed

BW Offshore has partnered with international global infrastructure investors for the equity financing of the LNGFPSO for the Barossa gas field offshore Australia.

Barossa is operated by Santos' subsidiary, Santos NA Barossa Pty Ltd on behalf of the Upstream JV partners.

The LNGFPSO services contract has an initial production period of 15 years, with options to extend for a further 10 years. The contract value based on the initial production period of 15 years is \$4.6 bill.

BW Offshore will be responsible for the unit's engineering, procurement, construction, installation, and operation. It will be turret moored on a newly built hull, based on BW Offshore's patented RapidFrame-work design.

Initial gas production is expected during the first half of 2025.

The LNGFPSO will be financed by a 14-year combined construction and long-term debt facility of \$1.150 bill and \$240 mill from the equity JV, as well as around \$1 bill in prepayments by Santos and the Barossa Upstream JV Partners during the construction period.

This JV agreement has been signed by all parties and its completion is subject to the customary regulatory approvals, which are expected within the next month, BW Offshore said.

The JV shareholding is BW Offshore Limited with 51%, ICMK Offshore Investment Pte Ltd (a 50:50 JV between ITOCHU Corp and a subsidiary of Meiji Shipping Co Ltd) = 25% and Macquarie Bank Limited with the remaining 24%. ■

NEWS NUDGE

Appointments

German LNG Terminal's Managing Director, Rolf Brouwer has returned to Vopak after successfully building up the company at Brunsbüttel on the River Elbe.

As of this month, the new Managing Directors will be the Head of Finance & Administration, Philipp Kroepels and Dr Michael Kleemiss, who is a representative of shareholder Gasunie.

* Excelsite Energy has

appointed David Liner as Vice President of Operations and Maintenance.

With over 25 years of maritime experience in the oil and gas industry, Liner will oversee the company's FSRU fleet and port operations, including fleet personnel and technical teams.

* Burckhardt Compression's CEO, Marcel Pawlicek, together with the Board, has started a planned and transparent succession process for the position of CEO.

After almost 40 years at Burckhardt Compression in various

regions and positions, the last 10 years as its CEO, Pawlicek said that it felt like the right time to undertake a well-planned succession process.

A proposal will be considered at the 2023 Annual General Meeting to include Pawlicek on the Board.

The search will include both internal and external candidates and will likely run until the end of this year with a new CEO being in place at the start of the new financial year beginning April, 2022, the company said. ■

EXMAR close to fixing two FLNGs

Belgian LNG and LPG vessel owner, EXMAR has reported an EBIT of \$17.6 mill for the first half of 2021, compared to \$11.3 mill for the same period in 2020.

This increase was mainly explained by \$3.2 mill impairment reversals on vessels, increased timecharter rates for the midsize LPG fleet and lower depreciation charges, resulting from the impairment recorded on several older vessels in 2020.

Following a strong fourth quarter in 2020 with a recovery in the LPG markets seen thanks to improved economic activity, the market started firmly in 2021.

EXMAR's one LNGC 'Excalibur' is on charter to Excelsior Energy until December 2021/early 2022.

In the Infrastructure division, EBIT amounted to \$31.5 mill for the period, compared to \$6.1 mill for 1H20. This year's EBIT included a termination fee of \$56.8 mill for the early cessation of the FSRU S188 charter agreement by Gunvor.

EXMAR also said that its Infrastructure team was pursuing various employment opportunities for 'Tango' FLNG.

Meanwhile, EXMAR is receiving the YPF settlement fees for the FLNG, in accordance with the agreed payment schedule signed last year.

In the regasification segment, EXMAR received an interim award on the arbitration started by Gunvor in September, 2019 regarding the FSRU S188's charterparty.

Following this award, EXMAR received a notice of early termination, plus a fee of \$56.8 mill subject to the charter party.

FSRU marketing

The unit had become available by end of June 2021. Marketing with ongoing technical validation for

several opportunities identified, commenced immediately.

Elsewhere, Houston-based EXMAR Offshore has completed the engineering and construction supervision of Murphy Oil's King's Quay semi-submersible floating production system (FPS), based on its patented OPTI hull design technology, at Hyundai Heavy Industries (HHI).

The award of a fourth OPTI hull design to HHI for Beacon Offshore's Shenandoah Project in the Gulf of Mexico will ensure a strong engineering activity level in the upcoming months, the company said.

During the first months of the year, EXMAR's liquidity position evolved positively, mainly due to the receipt of the early termination fee for the cancellation of the

FSRU S188 Gunvor charter and the YPF contractual monthly termination payments.

The Group expects a further strengthening of its liquidity position in the next few months thanks to its LPG vessel charters and YPF continuing to pay monthly termination instalments with the remaining balance of \$61.1 mill to be received by April, 2022. This is secured by a financial security issued by an investment grade counterparty.

EXMAR also said that it expected both barges to be under contract in the next 12 months and that it had sufficient liquidity to meet its present obligations and cover its working capital needs for at least 12 months from the authorisation date of these interim financials. ■

MOL buys into Russian LNG transshipment hubs

Mitsui OSK Lines (MOL) has signed a Letter of Intent with Russian public joint-stock company, State Transport Leasing Company (GTLK), to acquire 49% shares of the subsidiary Kamchatka and Murmansk FSU owning companies.

Each FSU owning company had earlier entered into bareboat charter agreements with Arctic Transshipment LLC, a joint venture between NOVATEK and TotalEnergies, that will provide transshipment services to NOVATEK's LNG-projects by offloading LNG cargoes from Arc7 LNGCs

onto conventional LNGCs.

The two FSUs, each having the world largest storage capacity of about 360,000 cu m, will be moored at Bechevinskaya Bay in the Kamchatka Territory and Ura Bay at Murmansk, respectively.

They are currently being built at Daewoo Shipbuilding & Marine

Engineering (DSME). Once their construction is completed, the FSUs will be towed to Kamchatka and Murmansk.

MOL said that it had been supporting the construction from the technical and engineering perspective, in particular the basic design, plan approval and site

supervision work.

By transporting LNG via the Northern Sea Route (NSR) and by transshipping at Kamchatka and Murmansk, voyage costs and greenhouse gas emissions are expected to be reduced.

In addition, securing LNG at a location close to a point of consumption is believed to increase security and reliability of energy supply, MOL said. Furthermore, ensuring steady access to energy resources in the Russian Arctic region should contribute to stable energy supply to Japan.

MOL will contribute to LNG transportation by providing a wide variety of services, from icebreaking LNGCs, which ship LNG from Russian Arctic loading ports to the LNG transshipment terminals, to conventional LNGCs, which will deliver LNG from the terminals to the final destinations. ■



MOL is to take a stake in new Russian transshipment facilities

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Wärtsilä joins LNGC concept design

Wärtsilä is to collaborate with ABS and Hudong-Zhonghua Shipbuilding (HZS) to develop a flexible, modular LNGC vessel concept.

Wärtsilä's Integrated Systems and Solutions team is working alongside specialists from ABS Global Simulation Centre and Global Sustainability Centre in Singapore, Houston and Athens and HZS' R&D and LNGC design team in Shanghai, to evaluate the vessel's performance against the IMO's carbon intensity indicator (CII) up to at least 2050.

This involves the use of multi-physics modelling and simulation, and the application of various decarbonisation technologies and solutions to the vessel's design and operational modes.

Highly flexible

The LNGC will be highly flexible and the entire vessel design will be optimised around a compact, electrified, integrated, and efficient propulsion power solution that will lead to an immediate reduction in CO2 emissions.

The design will also be ready to integrate future technologies in order to stay ahead of the CII requirements.

"The evolving demands of the CII mean vessels will need to be ready to continuously adapt to improve their rating and remain viable for the duration of their operational life. Advanced multi-physics modelling and simulation techniques enable the development of a vessel with a strong CII profile at launch that is also equipped to take advantage of

future de-carbonisation technologies as they mature," said Patrick Ryan, ABS Senior Vice President, Global Engineering and Technology.

"We are very glad to work closely together with Wärtsilä and ABS to develop the new generation of LNG carriers offering a low-carbon footprint and low OPEX cost," said Song Wei, HZS' R&D Deputy Director. "This state-of-the-art hybrid solution will be developed to power the future LNG carrier, enabling dual-fuel engines to run always at their best efficiency and providing flexible power supply modes to adapt to various load demands."

"Shipowners are currently faced with unprecedented challenges and uncertainties as they attempt to plan for their fleets to meet the IMO's CII trajectory of -70% by 2050. What is certain is that this planning must start now

in order to safeguard a future-proof newbuild vessel design.

"By optimising the vessel design around a compact, electrified and hybridised propulsion system, remarkably high efficiency will be maintained across a broad range of vessel speeds and power nodes - making it highly suitable to accommodate all needed vessel speed and voyage optimisations in the future," said Stefan Nysjö, Vice President, Power Supply, Wärtsilä Marine Power.

Second contract signed

Another contract won recently calls for the supply of three Wärtsilä Compact Reliq liquefaction plants to three new LNGCs.

Being built by Hyundai Samho Heavy Industries (HSHI) for Knutsen OAS Shipping, the latest orders are options taken following an

earlier contract for two vessels.

The Compact Reliq system was introduced last year. It features a compact design for easy installation and maintenance on all LNGC sizes. Based on the reversed nitrogen Brayton cycle refrigeration technology, the solution reliques the boil-off gas (BOG) and keeps the cargo cool under all operating conditions.

It allows a portion of the BOG to be used as fuel for the ship's engines, with the excess able to be sold as part of the LNG cargo.

In addition, last month, Wärtsilä was awarded a contract to supply a complete cargo handling system for a new LNG bunkering vessel.

The ship is being built at the Nantong CIMC Sinopacific Offshore and Engineering shipyard in China for Fratelli Cosulich, the Italian-based shipping group. ■



Wärtsilä is adding equipment to the design concept

NEWS NUDGE

More cargoes revealed

Giant Japanese energy group, Inpex Corp, is to ship a carbon neutral LNG cargo.

The cargo will be loaded at Inpex's Ichthys LNG project and is expected to arrive at Toho Gas' Chita LNG Terminal on 18th September, 2021.

The LNG shipment's carbon footprint has been offset using

carbon credits applied to greenhouse gas emissions across the entire natural gas supply chain, including upstream production, liquefaction, transportation, regasification, marketing and combustion by customers in Japan.

Meanwhile, Pakistan LNG Limited (PLL) has invited bids for eight conventional cargoes to be delivered in December, 2021 and January, 2022.

Bids will be opened on 11th October, 2021, according to the website.

Four cargoes of up to 140,000 cu m each are to be spread over four windows in December, 2021. The remaining four cargoes are scheduled for delivery through January.

All of the cargoes are to be supplied on a Delivered Ex-Ship (DES) basis to Port Qasim, Karachi.

Gail (India) has issued a tender to buy two LNG cargoes for delivery into India.

The company also offered a US cargo, industry sources said

this week.

It is seeking a cargo for delivery into Dabhol in November and a cargo for delivery into Dahej in December.

It has offered a cargo for a Cove Point loading in January next year. The tender was due to close on 15th September.

Gail has 20-year deals to buy 5.8 mill tonnes a year of US LNG, split between Dominion Energy's Cove Point plant and Cheniere Energy's Sabine Pass facility. ■

Ust Luga liquefaction plant EPC signed

RusKhimAlyans, Linde, and Renaissance Heavy Industries have signed an engineering, procurement and construction (EPC) contract to build a natural gas liquefaction plant within Ust Luga's gas processing complex (GPC).

This plant will be used for for processing ethane-containing gas. The operator is RusKhimAlyans, a joint venture between Gazprom and RusGazDobycha).

According to the EPC contract, Linde and Renaissance Heavy Industries will jointly provide the design work and be responsible for the supply of equipment and materials.

In addition, the two companies will construct and install two production trains with a total capacity of 13 mill tonnes of LNG per year.

Russian patented technology will be used to produce the LNG. The patent holders for the technology are Gazprom and Linde.

RusKhimAlyans' complex will have the largest capacity in Russia and one of the largest in the world in terms of gas processing (45 bill cu m per year) and will be the leader in northwestern Europe in

terms of LNG production (13 mill tonnes per year).

About 18 bill cu m of processed gas will be going into Gazprom's

gas transmission system.

Among the GPC's most important marketable products will be ethane, a raw material used in the

gas chemical industry.

The feedstock for the complexes GPC will come in the form of high ethane-content natural gas. ■



Ust Luga's new export terminal gains EPC agreement

NEWS NUDGE

Newbuildings, deliveries, etc

Through a subsidiary company, Mitsui OSK Lines (MOL) has signed timecharter contracts for four newbuilding LNGCs with NOVATEK Gas & Power Asia.

The 174,000 cu m vessels will be built by Daewoo Shipbuilding & Marine Engineering (DSME) for delivery in 2024.

They will be powered by MAN Energy Solutions engines, which offer major improvements in fuel efficiency, MOL said.

A new design has also been adopted whereby less boil-off gas (BOG) is generated from the cargo tanks through the use of a reliquefaction plant on board, and shaft generators will be fitted that use the rotating propeller shafts for power generation.

Meanwhile, broking sources have reported that the two 170,520 cu m LNGCs ordered by

Pan Ocean at HHI, were contracted on the back of a Shell timecharter.

Both vessels are due for delivery in 2023 and were ordered for the equivalent of \$199.6 mill each.

GasLog has announced on social media that it has completed the conversion of the 'Gaslog Singapore' to an FSU.

This conversion, a first for Gaslog, was undertaken by Sembcorp Marine in Singapore and the vessel has been chartered for 10 years to operate at the Sinolam LNG terminal in Panama.

She will be used to receive and store LNG while moored off Colon. Shell will supply the LNG.

The LNG will then be piped to an onshore regasification facility for use as feedstock for a power plant being built by Sinolam Smarter Energy LNG Power Co, a unit of private Chinese investment firm Shanghai Gorgeous.

In addition, Latsis subsidiary, Latsco Shipping, has taken delivery of the 174,000 cu m 'Hellas

Athina', its second LNGC.

She followed the 'Hellas Diana'. Both vessels were built by Hyundai Samho Heavy Industries (HSHI).

Trafigra has chartered the LNGCs, which are fitted with WinGD's X-DF engines and GTT's Mark III Flex containment system.

Elsewhere, broking sources have reported to sale of the 1983-built LNGC 'North Energy' and the 1980-built 'South Energy' for recycling.

The 125,788 cu m MOSS type 'North Energy' has been sold with delivery on the Indian sub-continent range for \$710 per ldt, including 3,500 tonnes of aluminium on board.

She was built as the 'Banshu Maru' and has also traded as the 'Wilenergy'.

The 126,750 cu m MOSS type 'South Energy' was reportedly sold for \$720 per ldt, also with 3,500 tonnes of aluminium, plus 1,200 tonnes of bunkers remaining on board.

She was built in the US as

'Lake Charles' before becoming the 'LNG Edo'.

HHI to market new designs at Gastech

Hyundai Heavy Industries (HHI) is to lobby global ship quality assurance and risk management companies, such as Lloyd's Register and flag states, to approve its newly developed gas carrier designs at next week's Gastech.

HHI's newly developed designs include a 40,000 cu m liquefied carbon dioxide carrier, a 91,000 cu m ammonia carrier and a 40,000 cu m FSRU.

A preliminary deal will be signed with Lloyd's Register to commercialise its virtual test-run solution of LNGCs, called HiDTS (Hyundai intelligent Digital Twin Ship).

HiDTS obtained an approval in principle (AIP) from LR last January, which means that a certification agency has reviewed its basic design and confirmed it meets its technical requirements and safety standards. ■

BASF wins FLNG equipment contract

PETRONAS' second FLNG project, 'PFLNG Dua' has been equipped with BASF's patented OASE purple for its acid gas removal unit process.

This is the first FLNG reference for BASF's OASE gas treatment technology.

PETRONAS and its Japanese engineering partner JGC Corp started up 'PFLNG Dua' in February, 2021 and completed its per-

formance test run in May. The FLNG is designed to extract natural gas from deepwater gas reservoirs in depths up to 1,500 m.

OASE purple is an amine-based solution that is used for the removal of acid gases, such as car-

bon dioxide (CO₂) and hydrogen sulfide (H₂S) from natural gas.

Their removal is necessary to prepare the gas for liquefaction and subsequent pipeline transportation. BASF's technology provides flexibility and low capital expenditure (CAPEX) for its customers, the company claimed.

In addition, the process' low energy demand combined with the non-corrosive nature of the solvent keeps operating and maintenance costs (OPEX) low. The process also provides a high level of gas purity and product gas recovery while keeping solvent losses to a minimum.

Andreas Northemann, BASF's Gas Treatment business head, said: "We are proud to now have our first FLNG reference in opera-

tion and running at 100% capacity, which is the fruit of many years of research. We applied our onshore LNG expertise and conducted motion studies and computational fluid dynamics (CFD) to ensure a high reliability, low maintenance design which meets our customer's stringent off-shore specifications and challenges."

PETRONAS owns and operates two FLNGs. The first is the 'PFLNG Satu', which has been operating since 2017. Construction of the second FLNG started in 2015 and it will be moored over the Rotan Gas Field at a water depth of 1,300 m, located 140 km offshore Kota Kinabalu, Sabah, Malaysia in the South China Sea, with a capacity to produce 1.5 mill tonnes of LNG annually.



Petronas' first FLNG

GTT unveils BOG management solution

GTT has launched LNG Optim, a digital smart shipping solution.

This tool was developed to help LNG operators and LNGC or LNG-fuelled shipowners to prepare for voyages in order to reduce their vessels overall fuel consumption and to manage the tanks' boil-off gas (BOG).

LNG Optim is based on GTT's experience in studying BOG management and was developed in co-operation with the company's subsidiaries, Ascenz, Marorka and OSE Engineering.

GTT claimed that it had already been adopted by major LNG

industry players.

Studies undertaken by the company when designing the solution took into account the modelling of complex phenomena, such as LNG ageing, the influence of sea states on BOG generation and the impact of active systems, such as reliquefaction plants and sub-coolers.

Philippe Berterottière, GTT's Chairman and CEO said, "This new technology innovation from GTT, which is the result of joint work between the different teams of the Group, marks our ambition in

the very promising field of smart shipping.

"Our digital offer aims to support shipowners, charterers and operators in the energy transition, by optimising the operational and environmental performance of their LNG-filled vessels," he said.

GTT has also received orders to design the tanks for five more newbuilding LNGCs.

Three of 174,000 cu m are being built by Hyundai Heavy Industries (HHI) for an Asian shipowner.

They will be fitted with the GTT Mark III Flex membrane containment system.

Deliveries of the vessels are scheduled for the second and third quarters of 2024.

The other two orders came from Hyundai Samho Heavy Industries (HSHI) on behalf of a European-based shipowner for delivery in the first quarter of 2024.

These two 174,000 cu m vessels will be also fitted with GTT's Mark III Flex membrane containment systems.

Monthly Large LNGC Values*

Newbuildings (174,000 cu m)	\$188.68 mill
Five years old (160,000 cu m)	\$144.09 mill
Total Fleet (529 ships)	\$59.86 bill
Orderbook (133 ships)	\$26.37 bill

Source: VesselsValue (26/08/21)

*The above is updated each month courtesy of VesselsValue

LNG rate assessments

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

Region	This week	Change*
East of Suez	\$58,500	-\$6,500
West of Suez	\$61,500	-\$6,500
12 mos T/C	\$93,000	-

*Since last report (02/09/21)

Source: Fearnleys (15/09/21)

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WORLD LNG CARRIER ORDERBOOK

Name	Containment system	Propulsion	Yard	Delivery date	Capacity	Primary Owner
Energy Intelligence	GTT 96 GW	MEGI	DSME	01/06/2021	174000	Alpha Gas
Minerva Limnos	GTT 96 GW	MEGI	DSME	01/06/2021	173400	Minerva Marine
Mu Lan	GTT 96 L03+	XDF	Hudong-Zhonghua	01/06/2021	174000	CSSC
Yiannis	GTT 96 GW	MEGI	DSME	01/06/2021	174000	Maran Gas Maritime
Maran Gas Isabella	GTT 96 GW	XDF	DSME	01/07/2021	174000	Maran Gas Maritime
Minerva Chios	GTT MK III Flex+	XDF	Samsung	01/07/2021	174000	Minerva Marine
Mol Hestia	Unknown	MEGI	DSME	01/07/2021	174000	MOL
Adamastos	GTT MK III Flex	XDF	Hyundai	01/08/2021	174000	Capital Gas
Attalos	GTT MK III Flex	XDF	Hyundai	01/08/2021	174000	Capital Gas
Celsius Carolina	Unknown	XDF	Samsung	01/08/2021	180000	Celsius Shipping
Gaslog Winchester	GTT MK III Flex+	XDF	Samsung	01/08/2021	180000	GasLog
Asklipios	GTT MK III Flex	XDF	Hyundai	01/09/2021	174000	Capital Gas
Diamond Gas Victoria	GTT MK III Flex	XDF	Hyundai	01/09/2021	174000	NYK
Global Sea Spirit	GTT 96 GW	XDF	DSME	01/09/2021	173400	Nakilat
Hellas Athina	GTT MK III Flex	XDF	Hyundai	01/09/2021	174000	Latsco Shipping
Lng Enterprise	GTT MK III Flex	XDF	Samsung	01/09/2021	174000	NYK
Maran Gas Kalymnos	GTT 96	XDF	DSME	01/09/2021	174000	Maran Gas Maritime
Hyundai Ulsan 2939	GTT MK III Flex	XDF	Hyundai	01/10/2021	180000	SK Shipping
Lng Endeavour	GTT MK III Flex	XDF	Samsung	01/10/2021	174000	NYK
Maran Gas Ithaca	GTT 96 GW	XDF	DSME	01/10/2021	174000	Maran Gas Maritime
Daewoo 2506	GTT 96	MEGI	DSME	01/11/2021	174000	Maran Gas Maritime
Global Sealine	GTT 96 GW	XDF	DSME	01/12/2021	173400	Nakilat
Lng Endurance	GTT MK III Flex	XDF	Samsung	01/12/2021	174000	NYK
Samsung 2336	GTT MK III Flex	XDF	Samsung	01/12/2021	174000	JP Morgan
Tenergy	GTT MK III Flex	XDF	Hyundai	01/12/2021	174000	Tsakos Energy Navigation
Vivit City Lng	GTT MK III Flex	XDF	Hyundai	01/12/2021	174000	H-Line
Grace Emilia	GTT MK III Flex	XDF	Hyundai	01/01/2022	174000	NYK
Gui Ying	GTT 96 L03+	XDF	Hudong-Zhonghua	01/01/2022	174000	CSSC
Elisa Aquila	GTT MK III Flex	XDF	Hyundai	01/03/2022	174000	NYK
Hudong-zhonghua H1829a	GTT 96 L03+	XDF	Hudong-Zhonghua	01/03/2022	170520	CSSC
Maran Gas Kythira	Unknown	XDF	DSME	01/03/2022	174000	Maran Gas Maritime
Samsung 2319	GTT MK III Flex	XDF	Samsung	01/03/2022	174000	JP Morgan
Clean Cajun	Unknown	XDF	Hyundai	01/04/2022	200000	Dynagas
Hudong-zhonghua H1788a	GTT 96	XDF	Hudong-Zhonghua	01/04/2022	79960	K-Line
Hudong-zhonghua H1789a	GTT 96	XDF	Hudong-Zhonghua	01/05/2022	79960	K-Line
Grace Freesia	GTT MK III Flex	XDF	Hyundai	01/06/2022	173000	NYK
Hudong-zhonghua H1830a	GTT 96 L03+	XDF	Hudong-Zhonghua	01/06/2022	170520	CSSC
Vivit Arabia Lng	GTT MK III Flex	XDF	Hyundai	01/06/2022	174000	H-Line
Clean Copano	Unknown	XDF	Hyundai	01/07/2022	200000	Dynagas
Samsung 2337	GTT MK III Flex	XDF	Samsung	01/07/2022	174000	JP Morgan
Bw Iris	GTT 96 GW	MEGI	DSME	01/08/2022	174000	BWGas

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 = 23rd June 2021

Name	Containment system	Propulsion	Yard	Delivery date	Capacity	Primary Owner
Santander Knutsen	Unknown	XDF	Hyundai	01/08/2022	174000	Knutsen
Sm Albatross		XDF	Hyundai	01/08/2022	174000	Korea Line
Bw Cassia	GTT 96 GW	MEGI	DSME	01/09/2022	174000	BWGas
Prism Diversity	Unknown	XDF	Hyundai	01/09/2022	180000	SK Shipping
Malaga Knutsen	Unknown	XDF	Hyundai	01/10/2022	174000	Knutsen
Sm Bluebird		XDF	Hyundai	01/10/2022	174000	Korea Line
United Prosperity	Not Applicable	XDF	Hudong-Zhonghua	01/10/2022	174000	China LNG Shipping
Alicante Knutsen	Unknown	XDF	Hyundai	01/11/2022	174000	Knutsen
Minerva Amorgos	GTT MK III Flex+	XDF	Samsung	01/11/2022	174000	Minerva Marine
Orion Song		XDF	Hyundai	01/11/2022	174000	JP Morgan
Daewoo 2514	Unknown	TFDE - Azipod	DSME	01/12/2022	172500	Sovcomflot
Huelva Knutsen	Unknown	XDF	Hyundai	01/12/2022	174000	Knutsen
Hyundai Ulsan 3243	Unknown	XDF	Hyundai	01/12/2022	174000	Knutsen
Orion Sage		XDF	Hyundai	01/12/2022	174000	JP Morgan
Asterix I	GTT MK III Flex	XDF	Hyundai	01/01/2023	174000	Capital Gas
Hudong-zhonghua H1837a	GTT 96 L03+	XDF	Hudong-Zhonghua	01/01/2023	79960	Shenzhen Gas
Samsung 2364	GTT MK III Flex+	XDF	Samsung	01/01/2023	174000	MISC
United Glory	Unknown	XDF	Hudong-Zhonghua	01/01/2023	174000	China LNG Shipping
Hyundai Repsol	GTT MK III Flex	XDF	Hyundai	15/01/2023	174000	Hyundai LNG Shipping
Samsung 2365	GTT MK III Flex+	XDF	Samsung	01/02/2023	174000	MISC
Samsung 2426	Unknown	XDF	Samsung	01/03/2023	174000	Pan Ocean
Zvezda 041	GTT MK III	TFDE - Azipod	Zvezda SSK	01/03/2023	172600	Smart LNG
Daewoo 2515	Unknown	TFDE - Azipod	DSME	01/04/2023	172500	MOL
Hudong-zhonghua H1833a	Unknown	XDF	Hudong-Zhonghua	01/04/2023	174000	China LNG Shipping
El Ferrol Knutsen	Unknown	XDF	Hyundai	01/05/2023	174000	Knutsen
Extremadura Knutsen	Unknown	XDF	Hyundai	01/06/2023	174000	Knutsen
Hyundai Ulsan 3244	Unknown	XDF	Hyundai	01/06/2023	174000	Knutsen
FSRU now LNGC	GTT NO 96	MEGI	DSME	15/06/2023	174000	MOL
Daewoo 2516	Unknown	TFDE - Azipod	DSME	01/07/2023	172500	Sovcomflot
Hyundai Ulsan 3189	Unknown	XDF	Hyundai	01/07/2023	174000	JP Morgan
Samsung 2425	Unknown	XDF	Samsung	01/07/2023	174000	Maran Gas Maritime
Hyundai Samho 8105	GTT MK III Flex	XDF	Hyundai	01/08/2023	174000	Sovcomflot
Hyundai Ulsan 3190	Unknown	XDF	Hyundai	01/08/2023	174000	JP Morgan
Daewoo 2517	Unknown	TFDE - Azipod	DSME	01/09/2023	172500	Sovcomflot
Sm Golden Eagle	Unknown	XDF	Hyundai	01/09/2023	174000	Korea Line
Zvezda 042	GTT MK III	TFDE - Azipod	Zvezda SSK	01/09/2023	172600	Smart LNG
Daewoo 2518	Unknown	TFDE - Azipod	DSME	01/10/2023	172500	MOL
Sm Kestrel	Unknown	XDF	Hyundai	01/10/2023	174000	Korea Line
Zvezda 043	GTT MK III	TFDE - Azipod	Zvezda SSK	01/10/2023	172600	Smart LNG
Greek owner 1/4		ME-GA	Hyundai	15/10/2023	200000	Dynagas
HLS	GTT NO 96	MEGI	DSME	15/10/2023	174000	Hyundai LNG Shipping

Name	Containment system	Propulsion	Yard	Delivery date	Capacity	Primary Owner
Hyundai European Owner	GTT MK III Flex	XDF	Hyundai	15/10/2023	174000	
Zvezda 044	GTT MK III	TFDE - Azipod	Zvezda SSK	01/11/2023	172600	Smart LNG
Daewoo 2519	Unknown	TFDE - Azipod	DSME	01/12/2023	172500	MOL
Jiangnan H2637	GTT MK III Flex	XDF	Jiangnan	01/12/2023	79800	Jovo Energy
Zvezda 045	Unknown	TFDE - Azipod	Zvezda SSK	01/12/2023	172600	Smart LNG
Greek owner 2/4		ME-GA	Hyundai	15/12/2023	200000	Dynagas
Hyundai Ulsan 3294	Unknown	XDF	Hyundai Inds - Ulsan	01/01/2024	174000	Hyundai LNG Shipping
Greek owner 3/4		ME-GA	Hyundai	15/03/2024	200000	Dynagas
Hyundai Ulsan 3295	Unknown	XDF	Hyundai Inds - Ulsan	01/04/2024	174000	Hyundai LNG Shipping
Hyundai Ulsan 3296	Unknown	XDF	Hyundai Inds - Ulsan	01/06/2024	174000	Hyundai LNG Shipping
Greek owner 4/4		ME-GA	Hyundai	15/06/2024	200000	Dynagas
Zvezda 046	Unknown	TFDE - Azipod	Zvezda SSK	01/08/2024	172600	Smart LNG
Hyundai Ulsan 3221	Unknown	XDF	Hyundai	01/09/2024	174000	Pan Ocean
Maran 1	GTT MK III Flex	XDF	Samsung	01/09/2024	174000	Maran Gas Maritime
Maran 2	GTT MK III Flex	XDF	Samsung	01/09/2024	174000	Maran Gas Maritime
Zvezda 047	Unknown	TFDE - Azipod	Zvezda SSK	01/09/2024	172600	Smart LNG
Hyundai Ulsan 3222	Unknown	XDF	Hyundai	01/10/2024	174000	Pan Ocean
Zvezda 048	Unknown	TFDE - Azipod	Zvezda SSK	01/10/2024	172600	Smart LNG
Hyundai Samho 8100	Unknown	XDF	Hyundai	01/11/2024	174000	Knutsen
Hyundai Ulsan 3223	Unknown	XDF	Hyundai	01/11/2024	174000	JP Morgan
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

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 = 23rd June 2021



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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	Coral Furcata	10,000	LNG/LPG/Ethylene	Worldwide	No	Anthony Veder
2011	Coral Fungia	10,000	LNG/LPG/Ethylene	Worldwide	No	Anthony Veder
2011	Akebono Maru	3,556	LNG	Japan	Yes	Chuo Kaiun
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	Coral Anthelia	6,500	LNG/Ethylene			Anthony Veder
2013	JX Energy TBN	2,500	LNG	Japan	Yes	JX Energy
2013	Kakuyu Maru	2,500	LNG	Japan	Yes	Tsurumi Sunmarine
2015	JS Ineos Ingenuity	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2015	JS Ineos Insight	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2015	JS Ineos Intrepid	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2015	LNG Barge TBN	3,000	LNG	US Coast	Yes	LNG America
2015	PetroChina TBN	30,000	LNG	China		PetroChina
2016	Hai Yang Shi You 301	30,000	LNG	Bali FSU	Yes	CETS (CNOOC)
2016	Clean Jacksonville	2,200	LNG	US Coast	Yes	CME
2016	JS Ineos Indepence	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2016	JS Ineos Innvation	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2016	JS Ineos Inspiration	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2016	LNG Prime	2,250	LNG	Northwest Europe	Yes	Veka Deen LNG
2017	Coralius	5,800	LNG	Northwest Europe/Baltics	Yes, for Skangas	Anthony Veder
2017	Coral EnergiCE	18,000	LNG	Northwest Europe/Baltics	Yes	Anthony Veder
2017	Coral Encanto	30,000	LNG	China	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	Oizmendi	600	LNG	Spain	Yes	Itsas Gas
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	Green Zeebrugge	5,000	LNG	Northwest Europe	Yes	NYK
2017	New Frontier 1	6,500	LNG	Northwest Europe	Yes	Shell
2018	Kairos	7,500	LNG	Baltic	Yes	Bernhard Schulte

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Built	Name	CBM	Cargo Type	Trading area	Trading in LNG?	Ship Owner / Operator
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	Bunker Breeze	1,200	LNG	Barcelona	Yes	Suardiaz Energy Shipping
2018	HUA XIANG 8	13,720	LNG	China	Yes	Zhejiang Huaxiang
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	Avenir LNG
2020	Avenir Accolade	7,500	LNG	Mediterranean	Yes	Avenir LNG
2020	Avenir Aspiration	7,500	LNG		Yes	Avenir LNG
2020	Kaguya	3,500	LNG	Japan	Yes	CLS
2020	CNTIC VPOWER Global	28,000	LNG	Myanmar	Yes	Dalian Inteh Group
2020	Ecobunker Tokyo Bay	2,500	LMG	Japan	Yes	Ecobunkers
2020	Optimus	6,000	LNG	NWE	Yes	Elenger
2020	ENN TBN	8,500	LNG	China	Yes	ENN
2020	FueLNG Bellina	7,500	LNG	Singapore	Yes	FueLNG
2020	SM Jeju LNG2	7,500	LNG	Korea	Yes	Korea Line
2020	Q-LNG 4000	4,000	LNG	US Coast	Yes	Q-LNG Transport/Harvey Gulf
2020	Flexfueller 002	1,480	LNG	Antwerp	Yes	Titan LNG
2021	Avenir Ascension	7,500	LNG		Yes	Avenir LNG
2021	Avenir Allegiance	20,000	LNG	Worldwide	Yes	Avenir LNG
2021	Bergen LNG	850	LNG	Norway	Yes	Bergen Tankers
2021	Dmitry Mendeleev	5,800	LNG	Russia	Yes	Gazprom Neft
2021	JMU TBN	2,500	LNG	Japan	Yes	JMU
2021	Ravenna Knutsen	30,000	LNG	Mediterranean	Yes	Knutsen OAS
2021	PE TBN	12,000	LNG	Singapore	Yes	MOL
2021	Gas Vitality	18,600	LNG	Mediterranean	Yes	MOL
2021	TG TBN	500	LNG	Korea	Yes	Trans Gas
2021	Titan Hyperion	8,000	LNG	Benelux	Yes	Titan LNG
2022	Veder TBN	30,000	LNG	Worldwide	Yes	Anthony Veder
2022	Avenir Achievement	20,000	LNG	Worldwide	Yes	Avenir LNG
2022	Knutsen TBN	5,000	LNG	Spain	Yes	Knutsen OAS
2022	Clean Cañaveral	5,400	LNG	USG	Yes	PNE
2023	Cryopeak TBA	4,000	LNG	West Canada	Yes	Cryopeak
2023	Knutsen TBN	12,500	LNG	Spain	Yes	Knutsen OAS
2023	SM Jeju LNG3	7,500	LNG	Korea	Yes	Korea Line
2023	Pan Ocean TBN	18,000	LNG	USG	Yes	Pan Ocean Co
2023	Krios	4,200	LNG	Benelux	Yes	Titan LNG
2023	Fratelli Cosulich TBN	8,000	LNG	Mediterranean	Yes	Fratelli Cosulich
2023	Kanfer TBN	6,000	LNG	Worldwide	Yes	Kanfer Shipping
2023	Kanfer TBN	6,000	LNG	Worldwide	Yes	Kanfer Shipping
2023	K Line TBN	18,000	LNG	Korea	Yes	K Line
2024	Avenir TBN (option)	20,000	LNG	Worldwide	Yes	Avenir LNG
2024	Avenir TBN (option)	20,000	LNG	Worldwide	Yes	Avenir LNG
2024	TBN	30,000	LNG	Australia	Yes	Anthony Veder ?
2026	Avenir TBN (option)	20,000	LNG	Worldwide	Yes	Avenir LNG
2026	Avenir TBN (option)	20,000	LNG	Worldwide	Yes	Avenir LNG

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