

LNG Shipping News

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28 April 2022

Natural gas demand to decline - US LNG exports to grow

Natural gas demand is set to decline slightly this year worldwide.

This is down to higher prices and market disruptions caused by Russia's invasion of Ukraine, according to the International Energy Agency's (IEA) latest quarterly update.

A small contraction in global gas demand compares with the IEA's earlier forecast of 1% growth in the previous quarterly update published in January.

The downward revision amounts to 50 bill cu m, equal to about half of last year's US LNG exports. By comparison, global natural gas consumption grew by 4.5% in 2021.

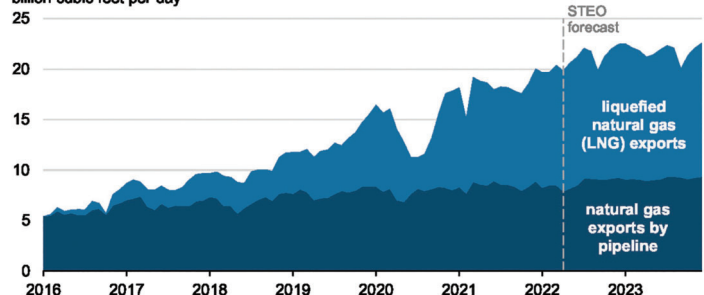
Russia's attack on Ukraine added further pressure and uncertainty to an already tight natural gas market, especially in Europe, the IEA added.

While there are no legal restrictions on importing Russian natural gas to the European Union (EU) at the time of writing, the war has persuaded EU members to try to reduce their dependence on Russian fossil fuel imports as quickly as possible.

On 3rd March, the IEA published a 10-point plan outlining a raft of measures to reduce the volume of Russian gas imports into Europe by over a third within a year, while remaining consistent with the EU's climate ambitions.

Spot gas prices have soared to record highs as Europe's push for more diversified natural gas supply has intensified demand for LNG cargoes, with some being diverted from Asia. For example, average spot LNG prices in Asia during the 2021/22 heating season were more than four times their

Monthly U.S. natural gas exports (Jan 2016–Dec 2023)
billion cubic feet per day



Source: EIA

five-year average, while in Europe, spot LNG prices were five times their five-year average, in spite of a mild winter.

Russia is Europe's largest natural gas supplier, meeting 33% of the region's demand in 2021, up from 25% in 2009. Natural gas consumption this year is expected to fall almost 6% in Europe. Asian demand is still expected to grow but by only 3% this year, a marked slowdown from the 7% growth seen in 2021.

Regions such as the Americas, Africa and the Middle East are expected to be less directly affected by gas market volatility, as they principally rely on domestic gas production. But they are nonetheless being affected by the wider economic impacts of the Ukrainian situation, including rising commodity prices, weaker purchasing power and lower investment, due to dented business confidence, the IEA concluded.

US export boom

As for the US, the Energy Information Administration (EIA) has forecast that the country's LNG exports were expected to average

12.2 bill cu ft per day this year.

This would result in the US overtaking Australia and Qatar to become the world's top LNG exporter.

In its latest short term outlook, the EIA said that annual US LNG exports would increase by 2.4 bill cu ft per day in 2022 and 0.5 bill in 2023.

Monthly LNG exports continued to set new records last year and averaged 11.3 bill cu ft per day this winter, 2.2 bill more than last winter. In March, 2022, US LNG exports hit a new high of 11.9 bill cu ft per day.

Export capacity also increased last year with the addition of Sabine Pass Train 6 and capacity expansions at the Sabine Pass and Corpus Christi LNG export terminals.

By the end of 2022, once the new Calcasieu Pass LNG export facility comes online, the US will have more LNG export capacity than any other country in the world.

The EIA also said that relatively high LNG demand in Asia and Europe would support continued rising exports.

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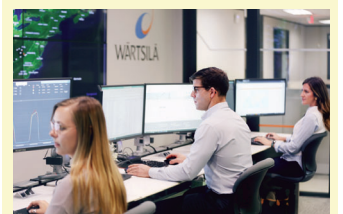
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India to lead Asia's regasification projects - GlobalData

Asia is projected to lead the worldwide LNG regasification projects startups from 2022 to 2026.

India is anticipated to be one of the prime countries to drive Asia's LNG regasification projects count by 2026, contributing around 21% of projects startups, according to data and analytics company, GlobalData.

GlobalData's latest report, 'LNG New-Build and Expansion Projects Analytics and Forecast by Project Type, Sector, Countries, Development Stage, Capacity and Cost, 2022-2026', revealed that India leads the Asian region with

20 LNG regasification projects totalling 3.4 trillion cu ft capacity due between 2022 and 2026.

In India, about 40% of the upcoming regasification projects are likely to be in the approval stage and expected to start operations between those dates. Feasibility and construction follow with 35% and 20%, respectively.

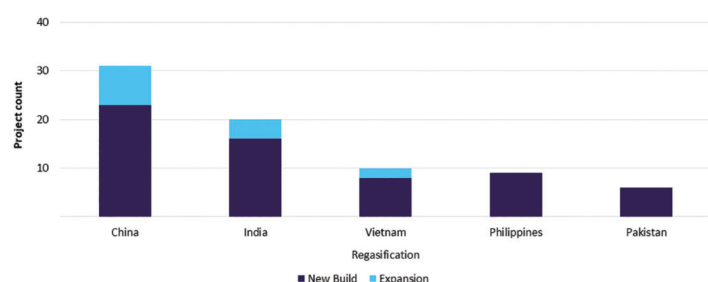
Sudarshini Ennelli, GlobalData Oil and Gas Analyst, commented: "In India, 16 upcoming regasification would be newbuild projects while the rest are expansion projects. Growing demand from both industrial sectors and Indian government's plans to increase gas share in energy mix to reduce emissions are driving the natural

gas demand in India."

Kakinada GBS Floating is the largest planned regasification project in India of 351 billion cu ft capacity. It is expected to be operational by 2024. To be managed by Crown LNG, the project will primarily serve industrial consumers, such as power and fertiliser plants in and around Andhra Pradesh state.

Yanam is another major Indian regasification project with a capacity of 268 billion cu ft. Hindustan LNG is the operator of this project, which is currently awaiting approval and is expected to start operations by 2026. This facility also aims to supply natural gas power plants in Andhra Pradesh. ■

Asia LNG regasification projects outlook by type and key countries, 2022-2026



Source: Projects Database, GlobalData Oil and Gas Intelligence Center

GlobalData.

Nigeria's Brass back on table

An LNG export project abandoned more than 17 years ago could be resurrected.

According to local media, the Nigerian Government is looking for new investors to restart the Brass Liquefied Natural Gas (BLNG) project.

Nigeria's Minister of State Petroleum Resources, Chief Timipre Sylva, recently promised to complete the project during an inspection of the site, in Brass, Bayelsa State.

He visited the site with officials from Greenville NLG, an interested investor in the BLNG, his spokesman, Horatius Egua, said in a statement to the media.

BNLG, was originally conceived to operate with up to four trains, with an annual capacity of 8.4 million tonnes. The project was initiated

in 2005 with a groundbreaking ceremony performed by the former President, Olusegun Obasanjo, on 14th May, 2007.

"You know the direction of the government as far as gas is concerned. We want to use gas as a transition fuel and also to use it to diversify our economy. You know that with gas you can get so many things and I have said that we can truly diversify our economy through gas," the Minister said, adding; "We want this project to pull through this time and we will do everything possible to ensure that the Final Investment Decision (FDI) is taken as soon as possible.

"Greenville NLG is a major

player in this sector and we know that they are committed to ensuring that the take-off of this project is achieved. We will continue to discuss and offer the necessary incentives to get this project off the ground.

"We are calling for more investments in the hydrocarbon sector of the economy, especially in gas. We are encouraging companies interested in gas to do so. We have enough gas reserves in the country and we are encouraging anyone with the capacity to bring in their investments," he added.

Present investors in the project are the Nigerian National Petroleum Company Limited (NNPCL), Eni and Total. ■

NEWS NUDGE

KOGAS buys BP gas

South Korea's state run Korea Gas Corp (KOGAS) has signed an 18-year LNG supply agreement with BP.

KOGAS will buy 1.58 million tonnes of LNG annually from BP, starting from 2025.

In addition, BP has been forced to temporarily shut down operations at Tangguh Train 2 due to what are described as mechanical irregularities on 17th April.

Tangguh Train 2 plant has a processing capacity of 3.8 million tonnes per year of LNG.

The energy major said it hoped to have the Train online again within a week. ■

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New EU sanctions threaten Russia's LNG expansion plans

The EU has targeted the export of equipment used for liquefaction in its latest round of sanctions against Russia.

This move will create more difficulties for the ongoing construction of the NOVATEK-led Arctic LNG 2 project and further threatens Russia's ambitious LNG expansion plans, according to Poten & Partners latest 'LNG in World Markets'.

These new sanctions, announced on 8th April, are the first that the EU has imposed directly on the LNG/gas sector, although they fall short of limiting imports of gas or LNG from Russia.

Also banned is the entry of Russian-flagged ships at EU ports and all imports of Russian coal.

Key liquefaction and cryogenic equipment is included in the list of banned goods. A list of restricted LNG equipment appears in Annex X of the Official Journal of the European Union alongside restricted technologies and products used for the oil and petrochemical industries.

The new EU sanctions leave equipment and services providers looking at potential exposure and examining whether they can continue to support Arctic LNG 2's construction, Poten said.

Many of the contractors and service providers involved with this project are European. For example, the engineering, procurement and construction contractors

(EPC) are France's TechnipEnergies, Italy's Saipem and Russia's Nipigas, with other providers such as Nuovo Pignone, which is the Italian arm of Baker Hughes, France's GTT and Germany's Siemens and Linde.

The sanctions also prohibit technical services but it is unclear if this covers management of EPC contracts or just vendor support.

Train 1 on schedule

However, it is still likely that Train 1 of the three-train Arctic LNG 2 project can be built on schedule because much of the equipment it needs is already in Russia, including Linde heat exchangers. However, sanctions will make it more difficult to complete Train 2 on schedule and is likely to delay Train 3, if they remain in force or are further tightened.

Train 1 is due to come online in 2023, Train 2 in 2024 and Train 3 in 2025. The key to starting up Train 1 next year is to tow the first gravity-based structure (GBS) on which modules will be attached in late August or early September this year to avoid ice buildup on the journey from the Murmansk manufacturing yard to the project's site.

On 4th April, the Lloyd's Market

Association's Joint War Committee, which includes writers of marine hull war business on the London market, added all Russian Federation territorial waters to its war risk areas.

As a result, insurance and reinsurance companies may stop offering cover for voyages to Russia and if they provide it, they will raise premiums making it more expensive to ship equipment.

Finance problems

Even before the fifth round of EU sanctions, the \$21.3 bill Arctic LNG 2 faced problems when some of the lenders providing the almost \$11 bill in loans were sanctioned by the US, EU or UK.

This potentially exposed European contracting companies working on the project to sanctions. Sanctioned Russian lenders Bank Otkritie and VEB were removed from the project in order to allow the work to continue.

How sanctions will affect the building of the Arc7 icebreaking LNGCs that will serve Arctic LNG 2 was also unclear at the end of last month. VEB was to have provided \$9.6 bill of funding to the 15 Arc7s being built by Russia's Zvezda yard. But critical support and equipment is coming from South

Korea's Samsung Heavy Industries, yet VEB is sanctioned by South Korea.

Delivery of propulsion equipment ordered from Europe and LNG cargo handling equipment contracted from Japan for the Zvezda ships was also under question.

The situation was also uncertain regarding the other six Arc7s of the 21-ship fleet being built by Daewoo Shipbuilding and Marine Engineering (DSME). These are also likely to require European and Japanese equipment. The first three ships are for Russia's Sovcomflot, while the second batch of three are for MOL and these may not be directly affected by sanctions if not deployed on Russian LNG trades.

Apart from Arctic LNG 2, Russia had planned to add almost 40 mill tonnes per year of capacity through the next phase of expansion from Arctic LNG 1, Russian Far East LNG, and Ust Luga.

Ultimately, the aim was to add yet more projects to eventually take production to 80-140 mill tonnes of LNG by 2035, up from the current level of about 30 mill tonnes per year, which comes from Novatek's Yamal LNG, Gazprom's Sakhalin 2 and the smaller Cryogas-Vysotsk facility, Poten said. ■

Petronas closes in on third FLNG

Petronas and Sabah Oil & Gas Development Corporation (SOGDC) have signed a Memorandum of Understanding (MoU) for a nearshore FLNG to be deployed offshore Sabah, Malaysia.

The project, known as ZLNG, is located at the Sipitang Oil and Gas Industrial Park (SOGIP) and is estimated to cost around MYR8.8 bill.

It is currently in the front-end engineering and design (FEED) stage and is targeted to complete a final investment decision (FID) at the end of this year.

Towards the end of last year,

Petronas awarded two FEED contracts to a JGC Corp/Samsung Heavy Industries consortium and to SAIPEM, as part of an international dual FEED design competition for an FLNG project in Sabah.

Under the deal, SOGDC would assist Petronas in securing all the necessary approvals, permits and/or utilities as the SOGIP

developer.

"The floating LNG facility will create multiple spin-offs for the state. It will unlock potential future businesses, such as tank regional distribution and bunkering, and potentially provide return to participating parties and expand the LNG Virtual Pipeline System (VPS) in Sabah," Joachim Gunsalam, Sabah's

Deputy Chief Minister and Minister of Industrial Development, said.

The LNG plant is planned to be ready for start-up by the end of 2026. Upon completion, it will increase Petronas' LNG production from FLNGs from 2.7 mill tonnes per annum to 4.7 mill.

Petronas already operates two FLNGs. ■

TES announces Wilhelmshaven LNG open season

Tree Energy Solutions (TES) is holding an open season to fast-track LNG imports into Europe through its planned Wilhelmshaven regasification terminal.

The open season started on 25th April, 2022, and is accessible to all parties seeking to import LNG in the drive to reduce European Union (EU) and Germany energy dependence on Russia.

Interested parties have been invited to submit an expression of interest to reserve capacity and services for the import of LNG.

TES is planning to initially import up to 16-20 bill cu m per year from 2025 onwards. The terminal will be connected via the new OGE 42 inch pipeline with the European high-pressure gas grid.

Both the terminal and pipeline capacity may be further expanded through the integration of shore-side LNG tanks and commissioning of a second export pipeline, TES said.

The expansion's timing and size will be determined by market demand for LNG imports from 2025 onwards, as well as the planned transition to green and clean, hydrogen-based gas.

To help de-carbonise Germany and neighbouring markets, from 2027/28 onwards, the Wil-



TES is conducting an LNG open season for its Wilhelmshaven hub

helmshaven regasification terminal will, as part of the Wilhelmshaven Green Energy Hub, increasingly be reserved for imports of fossil-free green gas.

Having a similar chemical composition as LNG, TES will be able to use the new and existing gas infrastructure, without further investments, allowing for early transition to imports and transport of green, fossil-free gas.

The open season covers three phases: non-binding application expression of interest, binding application window and closing of binding window.

Wilhelmshaven's terminal layout was designed with six ship

berths and 1.6 mill cu m of onshore storage capacity using eight shore-side tanks, of which four will be available during the initial stage.

"The TES-Wilhelmshaven project is unique in accelerating Germany's and Europe's plans to de-carbonise the energy market at scale whilst creating the opportunity to shift away from Russian gas imports as the way out of the current energy crisis," Otto Waterlander, TES CCO, said. "The open season makes it possible to materially meet the needs of the market and will help provide energy security for Germany and the rest of Europe by accelerating the growth of green gas imports." ■

Eni strengthens ties with EGAS

EGAS and Italian energy company Eni, have, signed a framework agreement to allow the maximisation of Egyptian gas production and LNG exports.

The agreement aims to promote Egyptian gas export to Europe, specifically to Italy.

Both parties agreed to utilise Egyptian gas reserves by increasing jointly operated gas activities and identifying opportunities for short-term gas production.

Eni will also optimise the exploration campaigns in existing blocks and in the newly acquired acreage in the Nile Delta, Eastern Mediterranean and Western Desert regions.

Together with an agreement signed for the restart of Damietta liquefaction plant last year, this latest signing will provide LNG cargoes of up to 3 bill cu m this year for Eni's LNG portfolio for Europe and Italy.

Eni has been present in Egypt since 1954, where it operates through the subsidiary IEOC. ■

McDermott gets Woodfibre go ahead

Canadian gas developer, Woodfibre LNG has issued a Notice to Proceed to prime contractor, McDermott International.

This allows McDermott to begin the work required to move the project toward major construction commencement in 2023.

Woodfibre said that it expected to reach substantial completion in 2027.

Powered by renewable hydro-electricity, Woodfibre LNG will be the world's lowest-emission LNG export facility, the company claimed.

When shipped to Asia, where it will replace coal-fired electricity, the Woodfibre produced LNG will reduce 3.5 mill tonnes of CO₂e per year, equivalent to 5% of British Columbia's annual emissions.

Woodfibre LNG is a Canadian subsidiary of Pacific Energy based in Singapore. The project is approved and regulated by the Canadian and British Columbia Governments and by the indigenous Squamish Nation. ■

NEWS NUDGE

GTT wins 10 more tank design orders

Last month, GTT received more orders to design the tanks of five LNGCs.

Three are to be built by Daewoo (DSME) and will be of 200,000 cu m each.

They will be fitted with a GTT NO96 membrane containment system.

Delivery of the vessels is scheduled during the last quarter of 2025.

The other two LNGCs are to be built by Hyundai Samho Heavy Industries (HSHI).

These two LNGCs will have a tank capacity of 174,000 cu m per ship and will be fitted with the Mark III

Flex membrane containment system.

They will be delivered in the first half of 2025.

GTT also confirmed that it had won orders to design the tanks for four LNGCs ordered at Hudong-Zhonghua Shipbuilding on behalf of two shipowners.

Each vessel will have a capacity of 174,000 cu m and the tanks will be fitted with a NO96 L03+ membrane containment system.

Deliveries of the vessels are scheduled for the second and third quarters of 2024, and the first quarter of 2025.

The 10th order came from Samsung Heavy Industries.

This LNGC will have a total LNG tank capacity of 180,000 cu m and will be fitted with the Mark III Flex membrane containment system. ■

Excelerate in revolving credit facility - closes IPO

Excelerate Energy and Excelerate Energy Limited Partnership have agreed a senior secured revolving credit facility.

This facility enables the partnership to borrow up to \$350 mill over a three-year term, which expires in April, 2025.

Borrowings will bear interest at a per annum rate equal to the term SOFR reference rate plus 0.1% (or alternate base rate) for the period, plus an applicable



Steve Kobos has presided over a credit facility and an IPO

margin, which will be based on the partnership's consolidated total leverage ratio defined under the facility.

The unused portion will be subject to an unused commitment fee at a rate per annum ranging from 0.375% to 0.5% based on the partnership's consolidated total leverage ratio.

The funds are expected to be used primarily for letters of credit, working capital, and other general corporate purposes.

"Securing this new \$350 mill credit facility represents an important milestone for Excelerate Energy, as we move forward as a public company," said Steven Kobos, Excelerate's President and CEO. "We greatly appreciate the ongoing support from the banks in our lending group."

JPMorgan Chase Bank is acting as administrative agent. JPMorgan Chase Bank along with Barclays Bank, Morgan Stanley Senior

Funding, Sumitomo Mitsui Banking Corp, and Wells Fargo Securities, served as joint lead arrangers and joint bookrunners, with BOKF, NA dba Bank of Oklahoma and First Financial Bank as additional lenders.

Gibson, Dunn & Crutcher and Frederic Dorwart, Lawyers served as Excelerate's counsel.

Excelerate has also announced the closing of its initial public offering (IPO) of 18.4 mill shares of its Class A common stock, including the full exercise by the underwriters of their option to purchase 2.4 mill additional shares, at a price to the public of \$24 per share.

The Class A common stock is listed for trading on the New York Stock Exchange (NYSE) under the ticker symbol "EE."

Excelerate received net proceeds of around \$416.2 mill, after deducting underwriting discounts and commissions. ■

NEWS NUDGE

Ships - newbuildings

Hudong-Zhonghua Shipbuilding has won an order for four 174,000 cu m LNGCs for the huge Qatar project.

Two shipowners were believed to be behind this order, although brokers are showing MOL as the lead company.

MOL has also ordered two 174,000 cu m LNGCs for around \$214 mill each at DSME.

They will be fitted with ME-GA engines and reliquefaction plants and were ordered on the back of an earlier project.

Brokers have also reported that Knutsen has firmed up at least a couple of options at Hyundai Samho for 2025 deliveries.

The 170,250 cu m LNGCs were believed to have cost the equivalent of \$224.5 mill each.

LNG Canada gets new CEO

A senior Shell Canada executive has been appointed as CEO at LNG Canada.

Jason Klein has replaced Peter Zebedee, who stepped down in late March as CEO of the project, which is being built in Kitimat, British Columbia, to export LNG to Asia.

Zebedee's surprising exit took effect as the export terminal entered its busiest construction period. He has since joined Suncor Energy as Executive Vice President of mining and upgrading, based in Alberta.

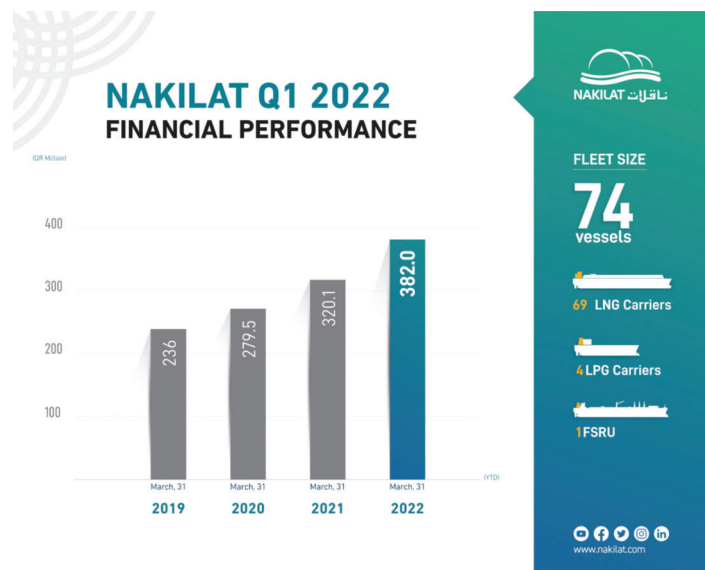
Klein is the third LNG Canada CEO to be hired from Shell Canada since the project applied for approvals from environmental regulators in 2014. ■

Nakilat sees profit increase

Qatari LNGC owner and operator, Nakilat achieved a net profit of QR382 mill for the first quarter of this year, compared to QR320.1 mill for the same period in 2021 - an increase of 19.3%.

Eng Abdullah Al Sulaiti, Nakilat's CEO, said: "We are very pleased to report a stellar earnings result for the first quarter 2022, which reiterates the resilient business model that Nakilat has built over the years. Against the current backdrop of global economic environment and the long-term needs for diversified, secure and reliable energy transportation solutions, Nakilat shall continue to grow its assets portfolio and generate sustainable return for its shareholders.

"I would like to take this opportunity to extend our deep appreciation to QatarEnergy, QatarEnergy Industrial Cities, Qatargas, and all our staff for their ongoing support and collaboration, in ensuring our success and the realisation of our vision of becoming a global leader and



provider of choice for energy transportation and maritime services," he said. ■

GTT warns of Russian sanctions consequences

GTT's (Gaztransport & Technigaz) consolidated revenues for the first quarter of 2022 were €68.2 mill, down 22.1% compared with 1Q21 when the cycle was still at its peak.

In 1Q22, newbuilding revenues totalled €61.7 mill, down 25.5%. The 1Q21 still benefited from the 2020's strong dynamic, while 1Q22 did not fully benefit from the numerous orders taken in 2021.

Royalties from LNG and ethane carriers amounted to €53.8 mill, while FLNG royalties totalled €0.7 mill during the quarter.

Other royalties increased significantly compared to the first quarter of last year. They were derived mainly from new business, including €3.6 mill from FSUs, €2.1 mill from GBS' and €0.7 mill from onshore storage tanks.

LNG as fuel was the only segment to record a decline in revenues, down to €0.7 mill, with 2021's order intake having little impact on first quarter 2022 revenues.

Revenues generated by Elogen (electrolysers) decreased slightly compared with the same period last year.

Revenues from services came to €5.5 mill, up 48.1% compared to 1Q21. Maintenance and assistance services for vessels in operation, as well as digital services, accounted for most of this growth.

In March, 2022, GTT set out its exposure to projects in Russia or dedicated to Russian projects. As at 21st April, 2022, the execution of these contracts continued to perform normally, in compliance with the applicable sanction regimes.

In Russia, GTT is involved in the design of three GBS as part of the

Arctic LNG 2 project, as well as in the design of tanks for 15 ice-breaker LNGCs currently being built at the Zvezda Shipbuilding Complex (Zvezda).

As of 31st March, 2022, a total of €97 mill was to be recognised for these projects by 2026, including €21 mill in 2022.

Other orders in progress in Asian shipyards and specifically dedicated to Russian Arctic projects include six icebreaker LNGCs and two FSUs. At the end of March, they represented an additional total of €48 mill for GTT to be recognised by 2024, including €30 mill in 2022.

Lastly, eight conventional LNGCRs ordered by international shipowners, currently being built in Asian shipyards, are intended for Arctic LNG 2 projects but are able to operate in all types of conditions.

Risks warning

In view of the international sanctions currently in force, which are increasingly affecting LNG liquefaction projects in Russia, the continuation and proper performance of these contracts are subject to risks that GTT said it was unable to assess at this time.

In particular, it noted that sanctions were liable to affect exports to Russia of certain products or equipment to be used in projects on which GTT is working, which may result in their deferrals or cancellations.

Looking further ahead than this year, the Group expects to benefit from the current robust order momentum. Orders received since mid-2020 correspond to delivery dates spread mainly over the 2023-2025 period. As a result, the Group said that it expected to achieve significantly higher revenues and earnings from 2023 onwards than in 2022.

The Group may have to revise its 2022 targets if the risks regarding the Russian projects were to materialise.

Philippe Berterotti, GTT's Chairman and CEO, said: "With 34 LNGC orders booked in the first quarter of 2022, GTT's commercial performance remains very strong, in line with that of 2021.

"In addition, order intake in the LNG as fuel segment confirms growing interest in GTT's membrane technology, with 20 additional units in the first quarter of 2022.

"The Group is also continuing its R&D efforts. It has obtained several new approvals and has also signed a key partnership with Shell for the development of a hydrogen transport vessel.

"Lastly, Elogen has announced that its planned gigafactory, pre-notified by the French government, will be located at Vendôme in the Centre-Val de Loire region, France.

"From a financial perspective, revenues for the first quarter of 2022 were, as expected, lower than for the first quarter of 2021. The decline is attributable to a



GTT CEO Philippe Berterotti

base effect, as the first quarter of 2021 still benefited from 2020's strong dynamic, whereas the first quarter of 2022 did not fully benefit from the high level of orders taken in 2021.

"In addition, in the press release issued on 9th March, 2022, GTT set out its exposure to projects in which it is engaged in Russia. To date, GTT continues to perform these contracts in compliance with the applicable sanction regimes. However, the current situation exposes some of these projects to delay or cancellation risks. If these risks materialise, the Group may have to revise its 2022 targets.

"On the other hand, the crisis also highlights the importance of gas requirements globally, the need for European countries to achieve energy independence in respect of Russia and, more specifically, the strategic importance of maritime transport of LNG, GTT's core business. The Group therefore expects the current robust order momentum to continue," he said. ■

NEWS NUDGE

Caribbean small-scale LNG terminals

Indian-based cryogenic equipment manufacturer and solutions provider, INOXCVA has been awarded a contract by Caribbean LNG for the design, engineering & supply for a small-scale receiving and regasification terminal.

ing and regasification terminal.

The terminal is to be built on a turnkey basis in Antigua, West Indies.

Caribbean LNG is a joint venture between Eagle LNG Partners and Antigua Power Co (APC).

Wärtsilä was awarded the contract to supply and install a 46 MW dual-fuel power plant by APC. The plant will operate primarily on regasified LNG. Antigua

Public Utilities Authority (APUA) will be the gas purchaser.

The Antigua plant will operate using five Wärtsilä 34DF dual-fuel engines capable of operating with both gas and light fuel oil. It is expected to become operational in 3Q23.

In addition, Eagle LNG Partners has signed a Heads of Agreement (HoA) with Curaçao-based Aqualectra, aimed at taking the

first step towards supplying gas to the island.

Aqualectra will use the gas for the production of water and electricity in Curaçao.

The negotiation period is projected to be finalised by mid-year, and, after all necessary permits have been acquired, both parties will continue with the developments to make gas supply to Curaçao possible. ■

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LNGC repairer MMHE signs up Silverstream

LNGC repair facility, Malaysia Marine and Heavy Engineering (MMHE), has signed an agreement with maritime clean technology company Silverstream Technologies.

This co-operation is aimed at retrofit opportunities for Silverstream's air lubrication technology - the patented Silverstream System - as well as collaboration, information and knowledge sharing between the two companies.

MMHE, one of the most prominent LNGC repair yards in Asia, will collaborate with Silverstream to support LNGC owners and operators in their de-carbonisation efforts by improving the efficiency of their vessels towards EEXI and CII compliance, the company said.

As part of the agreement, the two organisations will perform joint promotion of the Silverstream System and other complementary products and services, and MMHE will become an approved installation provider for the air lubrication technology.

Silverstream will also provide technical and commercial support

to assist MMHE in securing contracts, including the provision of initial efficiency saving estimates and system design information on proposed installations.

Pandai Othman, MMHE's Managing Director and CEO, said: "We are delighted to sign this agreement with Silverstream, a renowned maritime clean technology service provider. This strategic partnership is a promising start as it unlocks new commercial opportunities for both companies.

"Together, it allows us to bring the powerful combination of MMHE's retrofit and conversion technical expertise and Silverstream's air lubrication system to market in supporting our customers' de-carbonisation strategies, thus accelerating the industry's transition to cleaner shipping."

Noah Silberschmidt, Founder &

CEO, Silverstream Technologies, added: "We are very pleased to announce our collaboration with MMHE, a world class shipyard with an exceptional history in LNGC repair and conversion services.

"By working together, we aim not only to raise awareness among our combined customer base of Silverstream's market-leading air lubrication technology, and MMHE's role as one of the world's leading LNGC shipyards, but also to encourage adoption of clean technologies more widely in the industry as an essential step in shipping's de-carbonisation journey," he said.

A wholly owned subsidiary of Malaysia Marine and Heavy Engineering Holdings (MHB), MMHE has more than 45 years' experience in delivering energy and marine solutions for a wide range of heavy engineering facilities and vessels. ■

ABS issues AiP for FLNG design

An FLNG concept, which makes use of storage tanks from older LNGCs, has been granted approval in principle (AiP) by ABS.

This design, jointly developed by Kawasaki Kisen Kaisha ("K" LINE) and JGC Corp (JGC), supported by Japan's Ministry of Land, Infrastructure, Transport and Tourism (MLITT), involves retrofitting LNG storage tanks from MOSS type LNGCs into the hulls of newbuilding FLNGs.

By re-using existing LNG vessels' Type 'B' storage tanks, the potential number of shipyards globally able to build FLNGs is increased, which supports the forecast demand for a wider and quicker adoption of this technology, the stakeholders said.

"In many areas of the world, FLNG represents a potential solution to the challenge of meeting increasing demand for natural gas without the need for an export pipeline to shore and the associated infrastructure. ABS is committed to supporting development of FLNG globally while retaining a laser focus on safety," said Tor Ivar Guttusrod, ABS Director, FLNG and FSRU.

"This innovative FLNG leverages "K" LINE's expertise in LNG carrier business and contributes to reuse of existing assets to support the world's environment. "K" LINE will continue to make relentless efforts and generate new values to meet the diversifying needs of our customers," said Satoshi Kanamori, Executive Officer of "K" LINE.

"This is based on our technical capabilities accumulated in FLNG EPC projects. This results in the enhancement of the customer's FLNG business since it is potentially an optimised CAPEX solution. JGC will continue to develop FLNG technologies for open seas and nearshore," added Hiroyuki Ishizaki, JGC's Executive Officer. ■

HHI orders ALS compressors for Pan Ocean vessels

Hyundai Heavy Industries has contracted TMC Compressors (TMC) to deliver marine air lubrication system (ALS) compressors for three LNGCs.

The 174,000 cu m LNGCs are under construction for Pan Ocean.

Each vessel will be equipped with HHI's in-house Hi-ALS air lubrication system.

TMC has developed a range of frequency-controlled marine compressors for use in combination with ALS to help ships further reduce fuel consumption and emissions to air.

Each of three LNGCs will be equipped with three TMC ALS compressors. The ALS compressors will be fitted to HHI's Hi-ALS system.

"ALS is about reducing fuel consumption, energy costs and emissions to air. It is a great way of reducing the shipping industry's environmental footprint while also reducing shipowners' opex," said Hans Petter Tanum, TMC's Director of Sales and Business Development.

TMC's frequency-controlled ALS compressors also offer fuel savings, compared to conventional compressors. As the frequency-controlled technology offers precise control of the compressor speed, the speed of the electrical motor will also adjust itself according to what is required to produce the exact air volume necessary to meet the actual compressed air consumption.

In turn, lower air consumption requires less speed on the compressor and this directly results in less power consumption.

"We have supplied several ALS compressors to HHI in the past two years, but so far we have only seen the tip of the iceberg for the adoption of ALS technologies," Tanum added.

The equipment will be manufactured in Scandinavia and



TMC's Hans Petter Tanum

shipped to South Korea.

TMC offers compressors for ALS applications ranging from 50 kW to 400 kW capacity, plus the associated ALS control systems. ■

Wärtsilä wins more LNGC OMA contracts

Wärtsilä has signed optimised maintenance agreements (OMAs) covering another two LNGCs, which are technically managed and operated by the Japanese shipping group MMS.

The agreements, signed in February, 2022, are designed to deliver maximised engine uptime and long-term cost predictability, optimising maintenance for highest efficiency and lowest carbon footprint.

Central to the OMAs value is Wärtsilä's latest digital predictive maintenance solution, Expert Insight, the company claimed.

Using artificial intelligence (AI) and advanced diagnostics, the service enables on board equipment and systems to be monitored in real-time. Anomalies are flagged to specialists at Wärtsilä Expertise Centres who will pro-actively sup-

port customers with an appropriate resolution.

"When we introduced Expert Insight, we said that it would take predictive maintenance to the next level, and this has proven to be the case. It is a hugely beneficial service that forms the basis for better asset management decisions and increased operational efficiency. This lowers both operational cost, as well as emissions," said Henrik Wilhelms, Wärtsilä's Director, Agreement Sales.

Both LNGCs are fitted with Wärtsilä 50DF dual-fuel engines. In addition to Expert Insight's asset diagnostics and anomaly detection



MMS LNGCs will be monitored from technology centres

capabilities, under the terms of the agreements Wärtsilä will also provide spare parts, dynamic maintenance planning, remote op-

erational support, field services and workshop services.

Today, Wärtsilä has OMAs covering more than 260 LNGCs. ■

LNGC conversions to see greater demand for corrosion protection

Shipowners and shipyards converting existing oil and gas carriers into storage and production units are advised to ensure the fuel, water and cargo tanks are sufficiently protected from corrosion.

Reduced dependence on Russian oil and gas is leading to increased demand for ships able to transport and, in particular, store gas at key locations worldwide, Nippon Paint Marine said.

"We were already seeing increased demand for LNGC to FSRU conversions before the recent drastic disruption in oil and gas markets, but demand is now expected to exceed those initial expectations. We are seeing increased interest in countries considering storage and regas units to supplement and strengthen existing shore-based infrastructure," said Niko Yamanoue, Director, Nippon Paint Marine (Europe).

"The cancellation of Nord Stream 2 is also likely to increase demand for tonnage. But whether

owners build new, recommission tonnage laid up during the offshore downturn, or convert existing LNG carriers into FSRUs or FSUs, the performance of the protective coatings specified will be key to the commercial and technical success of these vessels.

"As floating oil and gas storage facilities are frequently built to NORSOK standards, we needed to offer certified coatings products. These assets are designed with much longer service intervals than conventional vessels, and an effective and reliable long-life anti-corrosive coating is crucial to their safe operation," Yamanoue explained.

NORSOK standard

Nippon Paint Marine's self-indicat-

ing NOA60HS coating was certified in 2020 by the Norwegian Technology Standards Institution as meeting the requirements of the NORSOK M-501 standard specifically for internal cargo tanks and installations.

"The NORSOK standards were developed in 1994 by Norway's petroleum industry to ensure protective coatings were suitable in offshore oil and gas environments. The addition of NOA to the NORSOK M-501 approved product range marked a significant development in the structural safety of offshore vessels and installations, such as FSOs, FSRUs and FPSOs," Yamanoue further explained.

"NOA60HS eliminates the risk of anti-corrosion coatings applied with low film thickness, a contrib-

utory factor in corrosion influenced structural failure," he said.

The anti-corrosion system incorporates a self-indicating technology developed to prevent incorrect application. If the coating appears transparent, then the film thickness is incorrect. However, when it is opaque, the specified film thickness has been achieved.

Yamanoue added: "Correctly applied coatings to tank edges and corners, improves the structural integrity of internal spaces, providing greater protection."

A number of LNGCs are already operating with NOA coatings, and Nippon Paint Marine said it anticipated a rush of new orders, as demand for gas ships and conversions heats up. ■

Monthly Large LNGC Values*

Newbuildings (174,000 cu m)	\$210.55 mill
Five years old (174,000 cu m)	\$106.13 mill
Total Fleet (543 ships)	\$66.12 bill
Orderbook (203 ships)	\$44.67 bill

*Source: VesselsValue (25/04/22)

*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	\$48,000	+\$11,000
West of Suez	\$52,500	+\$7,500
12 mos T/C	\$107,000	+\$4,500

*Since last report (06/04/22)

Source: Fearnleys (27/04/22)

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 Innvovation	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
2018	LNG London	3,000	LNG	Northwest Europe	Yes	Shell

Built	Name	CBM	Cargo Type	Trading area	Trading in LNG?	Ship Owner / Operator
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	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	Xin Ao Pu Tuo Hao	8,500	LNG	China	Yes	ENN
2021	Avenir Ascension	7,500	LNG		Yes	Avenir LNG
2021	Avenir Allegiance	20,000	LNG	China	Yes	SSES
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	Coral Nordic	30,000	LNG	Worldwide	Yes	Anthony Veder
2022	Avenir Achievement	20,000	LNG	Worldwide	Yes	Avenir LNG
2022	Haugesund Knutsen	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	Kuntsen 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
2023	PNE TBN	5,500	LNG	USG	Yes	PNE
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 ?
2024	Crowley TBN	12,000	LNG	US Coast	Yes	Crowley Maritime
2024	CNOOC TBN	12,000	LNG	China	Yes	CNOOC
2024	TBN	12,500	LNG	Worldwide	Yes	???
2026	Avenir TBN (option)	20,000	LNG	Worldwide	Yes	Avenir LNG
2026	Avenir TBN (option)	20,000	LNG	Worldwide	Yes	Avenir LNG

WORLD LNG CARRIER ORDERBOOK

Name	Owners	Yard	Ordered	Capacity	Propulsion	Delivery
Minerva Amorgos	Minerva Marine	Samsung	1/1/2019	174,000	XDF	Q4, 2022
Clean Cajun	Dynagas	Hyundai Heavy	5/22/2019	200,000	XDF	Q2, 2022
Clean Copano	Dynagas	Hyundai Heavy	5/22/2019	200,000	XDF	Q3, 2022
Orion Star	JP Morgan	Samsung	6/1/2019	174,000	XDF	Q2, 2022
Orion Sun	JP Morgan	Samsung	6/1/2019	174,000	XDF	Q2, 2022
Prism Diversity	SK Shipping	Hyundai Heavy	6/29/2019	180,000	XDF	Q3, 2022
Asterix I	Capital Gas	Hyundai Heavy	8/1/2019	174,000	XDF	Q1, 2023
Hudong-zhonghua H1829a	CSSC	Hudong-Zhonghua	8/1/2019	174,000	XDF	Q1, 2024
Hudong-zhonghua H1830a	CSSC	Hudong-Zhonghua	8/1/2019	174,000	XDF	Q2, 2024
Alexey Kosygin	Smart LNG	Zvezda SSK	9/1/2019	172,600	TFDE - Azipod	Q1, 2023
Pyotr Stolypin	Smart LNG	Zvezda SSK	9/1/2019	172,600	TFDE - Azipod	Q3, 2023
Sergei Witte	Smart LNG	Zvezda SSK	9/1/2019	172,600	TFDE - Azipod	Q4, 2023
Zvezda 044	Smart LNG	Zvezda SSK	9/1/2019	172,600	TFDE - Azipod	Q4, 2023
Zvezda 045	Smart LNG	Zvezda SSK	9/1/2019	172,600	TFDE - Azipod	Q4, 2023
Bw Cassia	BWGas	DSME	10/1/2019	174,000	MEGI	Q3, 2022
Bw Iris	BWGas	DSME	10/1/2019	174,000	MEGI	Q3, 2022
Samsung 2364	MISC	Samsung	10/10/2019	174,000	XDF	Q1, 2023
Samsung 2365	MISC	Samsung	10/10/2019	174,000	XDF	Q1, 2023
Vivit Arabia Lng	H-Line	Hyundai Samho	12/1/2019	174,000	XDF	Q2, 2022
Alicante Knutsen	Knutsen	Hyundai Samho	12/18/2019	174,000	XDF	Q4, 2022
Huelva Knutsen	Knutsen	Hyundai Samho	12/18/2019	174,000	XDF	Q4, 2022
Malaga Knutsen	Knutsen	Hyundai Samho	12/18/2019	174,000	XDF	Q3, 2022
Santander Knutsen	Knutsen	Hyundai Samho	12/18/2019	174,000	XDF	Q2, 2022
Sm Albatross	Korea Line	Hyundai Heavy	12/18/2019	174,000	XDF	Q3, 2022
Sm Bluebird	Korea Line	Hyundai Heavy	12/18/2019	174,000	XDF	Q4, 2022
Lng Prosperity	JP Morgan	Hyundai Heavy	12/19/2019	174,000	XDF	Q4, 2022
Orion Song	JP Morgan	Hyundai Heavy	12/19/2019	174,000	XDF	Q4, 2022
Grace Freesia	NYK	Hyundai Samho	12/27/2019	173,000	XDF	Q2, 2022
Lagenda Serenity	K-Line	Hudong-Zhonghua	1/1/2020	79,960	XDF	Q2, 2022
Lagenda Suria	K-Line	Hudong-Zhonghua	1/1/2020	79,960	XDF	Q2, 2022
Hudong-zhonghua H1831a	ULT	Hudong-Zhonghua	6/30/2020	174,000	XDF	Q3, 2022
Hudong-zhonghua H1832a	ULT	Hudong-Zhonghua	6/30/2020	174,000	XDF	Q1, 2023
Hudong-zhonghua H1833a	ULT	Hudong-Zhonghua	6/30/2020	174,000	XDF	Q2, 2023
Lng Harmony	JP Morgan	Hyundai Heavy	7/20/2020	174,000	XDF	Q3, 2023
Orion Sage	JP Morgan	Hyundai Heavy	7/20/2020	174,000	XDF	Q3, 2023
El Ferrol Knutsen	Knutsen	Hyundai Samho	7/30/2020	174,000	XDF	Q4, 2022
Extremadura Knutsen	Knutsen	Hyundai Samho	7/30/2020	174,000	XDF	Q1, 2023
Daewoo 2514	Sovcomflot	DSME	8/1/2020	172,500	TFDE - Azipod	Q1, 2023
Daewoo 2515	Sovcomflot	DSME	8/1/2020	172,500	TFDE - Azipod	Q2, 2023
Daewoo 2516	Sovcomflot	DSME	8/1/2020	172,500	TFDE - Azipod	Q3, 2023
Daewoo 2517	MOL, COSCO	DSME	8/1/2020	172,500	TFDE - Azipod	Q3, 2023
Daewoo 2518	MOL, COSCO	DSME	8/1/2020	172,500	TFDE - Azipod	Q4, 2023
Daewoo 2519	MOL, COSCO	DSME	8/1/2020	172,500	TFDE - Azipod	Q4, 2023
Zvezda 046	Smart LNG	Zvezda SSK	8/1/2020	172,600	TFDE - Azipod	Q3, 2024
Zvezda 047	Smart LNG	Zvezda SSK	8/1/2020	172,600	TFDE - Azipod	Q3, 2024
Zvezda 048	Smart LNG	Zvezda SSK	8/1/2020	172,600	TFDE - Azipod	Q4, 2024
Zvezda 049	Smart LNG	Zvezda SSK	8/1/2020	172,600	TFDE - Azipod	Q4, 2024
Zvezda 050	Smart LNG	Zvezda SSK	8/1/2020	172,600	TFDE - Azipod	Q4, 2024

Name	Owners	Yard	Ordered	Capacity	Propulsion	Delivery
Zvezda 051	Smart LNG	Zvezda SSK	8/1/2020	172,600	TFDE - Azipod	Q3, 2025
Zvezda 052	Smart LNG	Zvezda SSK	8/1/2020	172,600	TFDE - Azipod	Q3, 2025
Zvezda 053	Smart LNG	Zvezda SSK	8/1/2020	172,600	TFDE - Azipod	Q4, 2025
Zvezda 054	Smart LNG	Zvezda SSK	8/1/2020	172,600	TFDE - Azipod	Q4, 2025
Zvezda 055	Smart LNG	Zvezda SSK	8/1/2020	172,600	TFDE - Azipod	Q4, 2025
Sm Golden Eagle	Korea Line	Hyundai Heavy	8/12/2020	174,000	XDF	Q3, 2023
Sm Kestrel	Korea Line	Hyundai Heavy	8/12/2020	174,000	XDF	Q4, 2023
Grazyna Gesicka	Knutsen	Hyundai Heavy	10/30/2020	174,000	XDF	Q2, 2023
Lech Kaczynski	Knutsen	Hyundai Heavy	10/30/2020	174,000	XDF	Q1, 2023
Samsung 2425	Maran Gas Maritime	Samsung	11/1/2020	174,000	XDF	Q3, 2023
Hyundai Samho 8100	Knutsen	Hyundai Samho	12/14/2020	174,000	XDF	Q3, 2024
Orion Sky	JP Morgan	Hyundai Heavy	12/14/2020	174,000	XDF	Q4, 2024
Hyundai Ulsan 3221	Pan Ocean	Hyundai Heavy	12/15/2020	174,000	XDF	Q3, 2024
Hyundai Ulsan 3222	Pan Ocean	Hyundai Heavy	12/15/2020	174,000	XDF	Q4, 2024
Samsung 2426	Pan Ocean	Samsung	1/1/2021	174,000	XDF	Q2, 2023
Jules Verne	Sovcomflot	Hyundai Samho	1/8/2021	174,000	XDF	Q2, 2023
Hudong-zhonghua H1837a	Shenzhen Gas	Hudong-Zhonghua	3/21/2021	79,960	XDF	Q1, 2023
Hyundai Ulsan 3294	Hyundai LNG Shipping	Hyundai Heavy	4/15/2021	174,000	XDF	Q1, 2024
Hyundai Ulsan 3295	Hyundai LNG Shipping	Hyundai Heavy	4/29/2021	174,000	XDF	Q2, 2024
Hyundai Ulsan 3296	Hyundai LNG Shipping	Hyundai Heavy	4/29/2021	174,000	XDF	Q3, 2024
Hyundai Samho 8139	Knutsen	Hyundai Samho	4/30/2021	174,000	XDF	Q4, 2023
Jiangnan H2637	Jovo Energy	Jiangnan	5/1/2021	79,800	XDF	Q4, 2023
Samsung 2473	Maran Gas Maritime	Samsung	5/1/2021	174,000	XDF	Q3, 2024
Samsung 2474	Maran Gas Maritime	Samsung	5/1/2021	174,000	XDF	Q3, 2024
Daewoo 2521	Hyundai LNG Shipping	DSME	5/28/2021	174,000	MEGI	Q3, 2023
Hyundai Ulsan 3290	Dynagas	Hyundai Heavy	5/31/2021	200,000	ME-GA	Q4, 2023
Hyundai Ulsan 3291	Dynagas	Hyundai Heavy	5/31/2021	200,000	ME-GA	Q4, 2023
Hyundai Ulsan 3292	Dynagas	Hyundai Heavy	5/31/2021	200,000	ME-GA	Q1, 2024
Hyundai Ulsan 3293	Dynagas	Hyundai Heavy	5/31/2021	200,000	ME-GA	Q3, 2023
Daewoo 2520	MOL	DSME	6/1/2021	174,000	MEGI	Q4, 2023
Amore Mio I	Capital Gas	Hyundai Heavy	6/18/2021	174,000	ME-GA	Q4, 2023
Axios II	Capital Gas	Hyundai Heavy	6/18/2021	174,000	ME-GA	Q4, 2023
Alexandre Dumas	Sovcomflot	Hyundai Samho	7/1/2021	170,520	XDF	Q1, 2024
Hyundai Samho 8147	H-Line	Hyundai Samho	7/1/2021	174,000	XDF	Q3, 2023
Samsung 2459	Celsius Shipping	Samsung	7/1/2021	180,000	ME-GA	Q2, 2023
Samsung 2460	Celsius Shipping	Samsung	7/1/2021	180,000	ME-GA	Q3, 2023
Samsung 2461	Celsius Shipping	Samsung	7/1/2021	180,000	ME-GA	Q4, 2023
Victor Hugo	Sovcomflot	Hyundai Samho	7/1/2021	170,520	XDF	Q3, 2024
Hyundai Samho 8101	Knutsen	Hyundai Samho	7/13/2021	174,000	XDF	Q4, 2023
Hyundai Samho 8102	Knutsen	Hyundai Samho	7/13/2021	174,000	ME-GA	Q3, 2025
Hyundai Ulsan 3320	JP Morgan	Hyundai Heavy	7/13/2021	174,000	ME-GA	Q3, 2025
Hyundai Ulsan 3321	JP Morgan	Hyundai Heavy	7/13/2021	174,000	ME-GA	Q3, 2025
Hyundai Ulsan 3224	Pan Ocean	Hyundai Heavy	7/14/2021	174,000	ME-GA	Q4, 2024
Hyundai Ulsan 3225	Pan Ocean	Hyundai Heavy	7/14/2021	174,000	ME-GA	Q4, 2024
Daewoo 2522	Hyundai LNG Shipping	DSME	7/15/2021	174,000	MEGI	Q2, 2024
Hyundai Samho 8148	Knutsen	Hyundai Samho	7/22/2021	174,000	XDF	Q1, 2024
Hyundai Samho 8149	Knutsen	Hyundai Samho	7/22/2021	174,000	ME-GA	Q1, 2024
Hyundai Ulsan 3297	Hyundai LNG Shipping	Hyundai Heavy	7/22/2021	174,000	XDF	Q2, 2024
Hyundai Ulsan 3298	Hyundai LNG Shipping	Hyundai Heavy	7/22/2021	174,000	XDF	Q4, 2024
Hyundai Ulsan 3299	Hyundai LNG Shipping	Hyundai Heavy	7/22/2021	174,000	XDF	Q1, 2025

Name	Owners	Yard	Ordered	Capacity	Propulsion	Delivery
Samsung 2579	Celsius Shipping	Samsung	7/26/2021	180,000	ME-GA	Q1, 2024
Samsung 2584	Celsius Shipping	Samsung	8/1/2021	180,000	ME-GA	Q3, 2024
Samsung 2585	Celsius Shipping	Samsung	8/1/2021	180,000	ME-GA	Q3, 2024
Hudong-zhonghua H1838a	K-Line	Hudong-Zhonghua	9/1/2021	79,960	XDF	Q3, 2023
Hyundai Samho 8140	Capital Gas	Hyundai Samho	9/1/2021	174,000	ME-GA	Q3, 2024
Daewoo 2523	MOL	DSME	9/14/2021	174,000	ME-GA	Q1, 2024
Daewoo 2524	MOL	DSME	9/14/2021	174,000	ME-GA	Q2, 2024
Daewoo 2525	MOL	DSME	9/14/2021	174,000	ME-GA	Q3, 2024
Daewoo 2526	MOL	DSME	9/14/2021	174,000	ME-GA	Q4, 2024
Daewoo 2527	MOL	DSME	10/1/2021	174,000	ME-GA	Q3, 2024
Hudong-Zhonghua QP #1	Qatar Petroleum	Hudong-Zhonghua	10/1/2021	175,000	XDF	Q3, 2024
Hudong-Zhonghua QP #2	Qatar Petroleum	Hudong-Zhonghua	10/1/2021	175,000	XDF	Q1, 2024
Hudong-Zhonghua QP #3	Qatar Petroleum	Hudong-Zhonghua	10/1/2021	175,000	XDF	Q4, 2024
Hudong-Zhonghua QP #4	Qatar Petroleum	Hudong-Zhonghua	10/1/2021	175,000	XDF	Q1, 2025
MOL 23	MOL	DSME	10/1/2021	174,000	ME-GA	Q3, 2023
MOL 25	MOL	DSME	10/1/2021	174,000	ME-GA	Q3, 2025
MOL 26	MOL	DSME	10/1/2021	174,000	ME-GA	Q3, 2026
Samsung 2580	NYK	Samsung	10/1/2021	174,000	XDF	Q3, 2023
Samsung 2581	NYK	Samsung	10/1/2021	174,000	XDF	Q4, 2023
Samsung 2582	NYK	Samsung	10/1/2021	174,000	XDF	Q4, 2023
Samsung 2583	NYK	Samsung	10/1/2021	174,000	XDF	Q1, 2024
Samsung 2592	JP Morgan	Samsung	10/1/2021	174,000		Q2, 2024
Samsung 2593	JP Morgan	Samsung	10/1/2021	174,000		Q3, 2024
Samsung 2594	JP Morgan	Samsung	10/1/2021	174,000		Q4, 2024
Samsung 2595	JP Morgan	Samsung	10/1/2021	174,000		Q1, 2025
Hyundai Ulsan 3341	Capital Gas	Hyundai Heavy	11/4/2021	174,000	ME-GA	Q2, 2024
Hyundai Ulsan 3342	Capital Gas	Hyundai Heavy	11/4/2021	174,000	ME-GA	Q2, 2024
Qatar DSME 1/4	Qatar Petroleum	DSME	11/7/2021	174,000	MEGI	Q1, 2025
Qatar DSME 2/4	Qatar Petroleum	DSME	11/7/2021	174,000	MEGI	Q3, 2025
Qatar DSME 3/4	Qatar Petroleum	DSME	11/7/2021	174,000	MEGI	Q2, 2025
Qatar DSME 4/4	Qatar Petroleum	DSME	11/7/2021	174,000	MEGI	Q4, 2025
Qatar SHI 1/2	Qatar Petroleum	Samsung	11/7/2021	174,000	ME-GA	Q1, 2025
Qatar SHI 2/2	Qatar Petroleum	Samsung	11/7/2021	174,000	ME-GA	Q1, 2025
Daewoo 2528	Maran Gas Maritime	DSME	11/10/2021	174,000	MEGI	Q3, 2024
Daewoo 2529	Maran Gas Maritime	DSME	11/10/2021	174,000	MEGI	Q4, 2024
Daewoo 2530	BWGas	DSME	11/25/2021	174,000	MEGI	Q1, 2025
Daewoo 2531	BWGas	DSME	11/25/2021	174,000	MEGI	Q2, 2025
Qatar HHI 1	Qatar Petroleum	Hyundai Heavy	11/29/2021	174,000		Q1, 2025
Qatar HHI 2	Qatar Petroleum	Hyundai Heavy	11/29/2021	174,000		Q1, 2025
Qatar HHI 3	Qatar Petroleum	Hyundai Heavy	11/29/2021	174,000		Q2, 2025
Qatar HHI 4	Qatar Petroleum	Hyundai Heavy	11/29/2021	174,000		Q3, 2025
Samsung 2600	JP Morgan	Samsung	12/1/2021	174,000		Q3, 2024
Samsung 2601	JP Morgan	Samsung	12/1/2021	174,000		Q1, 2025
Samsung 2598	Celsius Shipping	Samsung	12/7/2021	180,000	ME-GA	Q1, 2025
Samsung 2599	Celsius Shipping	Samsung	12/7/2021	180,000	ME-GA	Q2, 2025
Hudong-zhonghua H1834a	ULT	Hudong-Zhonghua	12/8/2021	174,000	XDF	Q3, 2024
Hudong-zhonghua H1835a	ULT	Hudong-Zhonghua	12/8/2021	174,000	XDF	Q4, 2024
Hudong-zhonghua H1836a	ULT	Hudong-Zhonghua	12/8/2021	174,000	XDF	Q1, 2025
Samsung 2604	NYK	Samsung	12/27/2021	174,000	XDF	Q4, 2024
Daewoo 2532	GasLog	DSME	1/1/2022	174,000	MEGI	Q2, 2024

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 = 12th April 2022

Name	Owners	Yard	Ordered	Capacity	Propulsion	Delivery
Daewoo 2533	GasLog	DSME	1/1/2022	174,000	MEGI	Q3, 2024
Daewoo 2534	GasLog	DSME	1/1/2022	174,000	MEGI	Q2, 2025
Daewoo 2535	GasLog	DSME	1/1/2022	174,000	MEGI	Q3, 2025
NYK 2	NYK	Hyundai Samho	1/1/2022	174,000	XDF	Q1, 2025
Qatar SHI 3	Qatar Petroleum	Samsung	1/1/2022	174,000	ME-GA	Q1, 2025
Qatar SHI 4	Qatar Petroleum	Samsung	1/1/2022	174,000	ME-GA	Q2, 2025
Hyundai Samho 8173	SK Shipping	Hyundai Samho	1/4/2022	174,000	ME-GA	Q3, 2024
Daewoo 2537	Maran Gas Maritime	DSME	1/6/2022	174,000	MEGI	Q3, 2025
Daewoo 2538	Maran Gas Maritime	DSME	1/6/2022	174,000	MEGI	Q4, 2025
Hudong-zhonghua H1880a	MOL	Hudong-Zhonghua	1/7/2022	174,000	XDF	Q4, 2024
Hudong-zhonghua H1881a	MOL	Hudong-Zhonghua	1/7/2022	174,000	XDF	Q3, 2025
Hudong-zhonghua H1882a	MOL	Hudong-Zhonghua	1/7/2022	174,000	XDF	Q4, 2025
Hudong-zhonghua H1883a	MOL	Hudong-Zhonghua	1/7/2022	174,000	XDF	Q1, 2026
Hudong-zhonghua H1884a	MOL	Hudong-Zhonghua	1/7/2022	174,000	XDF	Q2, 2026
Hudong-zhonghua H1885a	MOL	Hudong-Zhonghua	1/7/2022	174,000	XDF	Q3, 2026
Samho Jan		Hyundai Samho	1/10/2022	174,000	ME-GA	Q1, 2025
Daewoo	MOL	DSME	1/17/2022	174,000	ME-GA	Q4, 2024
Daewoo 2539	Maran Gas Maritime	DSME	2/7/2022	174,000	MEGI	Q4, 2025
Daewoo 2540	Maran Gas Maritime	DSME	2/7/2022	174,000	MEGI	Q4, 2025
Bono Samho 1	Bono Energy	Hyundai Samho	2/10/2022	174,000	ME-GA	Q1, 2025
Bono Samho 2	Bono Energy	Hyundai Samho	2/10/2022	174,000	ME-GA	Q1, 2025
Qatar DSME 5	Qatar Petroleum	DSME	2/15/2022	174,000	MEGI	Q2, 2025
Qatar HHI 5	Qatar Petroleum	Hyundai Heavy	2/15/2022	174,000		Q3, 2025
Qatar HHI 6	Qatar Petroleum	Hyundai Heavy	2/15/2022	174,000		Q4, 2025
Qatar SHI 5	Qatar Petroleum	Samsung	2/15/2022	174,000	ME-GA	Q2, 2025
HL 1	H-Line	Samsung	2/16/2022	174,000		Q1, 2025
HL 2	H-Line	Samsung	2/16/2022	174,000		Q2, 2025
HL 3	H-Line	Samsung	2/16/2022	174,000		Q3, 2025
HL 4	H-Line	Samsung	2/16/2022	174,000		Q3, 2025
Glovis Samho	Hyundai Glovis	Hyundai Samho	2/21/2022	174,000		Q4, 2024
Samsung 1		Samsung	2/24/2022	174,000		Q2, 2025
Samsung 2		Samsung	2/24/2022	174,000		Q2, 2025
Samsung 3		Samsung	2/24/2022	174,000		Q3, 2025
Samsung 4		Samsung	2/24/2022	174,000		Q3, 2025
Jiangnan ADNOC 1	ADNOC	Jiangnan	3/1/2022	175,000	XDF	Q1, 2025
Jiangnan ADNOC 2	ADNOC	Jiangnan	3/1/2022	175,000	XDF	Q2, 2025
HHI 1	Dynagas	Hyundai Heavy	3/3/2022	200,000	ME-GA	Q1, 2025
HHI 2	Dynagas	Hyundai Heavy	3/3/2022	200,000	ME-GA	Q2, 2025
HHI 3	Dynagas	Hyundai Heavy	3/3/2022	200,000	ME-GA	Q4, 2025
BW DSME 3	BWGas	DSME	3/18/2022	174,000	MEGI	Q4, 2025
BW DSME 4	BWGas	DSME	3/18/2022	174,000	MEGI	Q4, 2025
VG DSME 1	Venture Global LNG	DSME	3/24/2022	200,000		Q3, 2025
VG DSME 2	Venture Global LNG	DSME	3/24/2022	200,000		Q4, 2025
VG DSME 3	Venture Global LNG	DSME	3/24/2022	200,000		Q4, 2025
Dalian Merchant 1	China Merchant	Dalian Shipbuilding	3/31/2022	175,000	XDF	Q3, 2025
Dalian Merchant 2	China Merchant	Dalian Shipbuilding	3/31/2022	175,000	XDF	Q2, 2026
Samho 1	Knutzen	Hyundai Samho	3/31/2022	174,000	ME-GA	Q1, 2026
Samho 2	Knutzen	Hyundai Samho	3/31/2022	174,000	ME-GA	Q2, 2025
Samsung Apr	Celsius Shipping	Samsung	3/31/2022	180,000	ME-GA	Q4, 2025