

LNG Shipping News

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5 July 2018

Sovcomflot/Novatek in another strategic partnership

PAO Sovcomflot (SCF) and PAO Novatek signed a strategic partnership agreement on 28th June to develop logistical support for the Yamal LNG, Arctic LNG 2, plus other projects.

This agreement continues the strategic partnership already in place between the two Russian companies and is aimed at developing an efficient logistics solution for shipping oil and gas products within Russian Arctic seas, optimising the number of vessels deployed, as well as their technical specifications.

As part of the agreement, a new joint-venture will be established, which will arrange the cargo shipments (LNG, gas condensate) produced at the Yamal LNG and Arctic LNG 2 facilities.

To ensure the high quality shipping services, whilst maintaining control of capital expenditure and operating expenses, a centralised fleet management structure is being planned, operating to unified technical management standards.

SCF and Novatek have a history of co-operation. In 2010, the Aframax 'SCF Baltica' became the first large-capacity vessel to transit the Northern Sea Route (NSR) with a cargo of gas condensate for Novatek.

The voyage's aim was to evaluate the ability to export products on a year-round basis across the



Novatek's Leonid Mikhelson and SCF's Sergey Frank sign the documents

NSR, both East and Westbound. Both SCF's CEO Sergey Frank and Novatek's Leonid Mikhelson were on board during the voyage.

LNGC experience

In 2014-2016, the partners successfully implemented the construction project for 'Christophe de Margerie', the world's first Arctic LNGC. In December, 2017, she shipped the first gas cargo from the Yamal Peninsular.

During this project, a unique experience was gained in operating vessels within the challenging conditions of the Kara Sea and the Gulf of Ob throughout the year, the companies said.

SCF's Frank, stated: "Working with Novatek on this new strategic

partnership, which is of a major national economic significance, our experts will bring to the table their specialist knowledge and engineering expertise. Their skills have been honed, tried and tested over many years of efficient and safe operation of icebreaking tankers - vessels purpose built for Sovcomflot to provide the mission critical logistics for major oil and gas projects in Russia's Arctic, comprising Varandey, Prirazlomnoye, Novy Port, and Yamal LNG.

"We are very grateful to our valued partners, PAO Novatek, for their continued trust in us, and the opportunity to work with them on the most interesting, unique and challenging projects implemented in Russia's Arctic," he said. ■

Teekay LNG Partners swaps CFO

Teekay LNG Partners has announced that Brody Speers, the current CFO of Teekay Gas Group, a management services company that provides services to the Partnership and its subsidiaries, has been appointed as Vice President, Corporate

Finance, of Teekay Shipping (Canada) and Scott Gayton, who currently serves as a Vice President at Teekay, has been appointed to takeover from Speers.

Gayton brings over 20 years of finance and accounting experience,

including most recently serving as CFO of Tanker Investments from the time of its initial public offering until its merger with Teekay Tankers.

He will also continue to oversee capital markets transactions across the Teekay Group. ■

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Novatek to co-operate with KOGAS

Novatek has signed a Memorandum of Understanding (MoU) with KOGAS to collaborate on developing future LNG projects.

The signing took part during the meeting between Russian President, Vladimir Putin, and the South Korean President, Moon Jae-in, plus the Chairman of the Management Board of PAO Novatek, Leonid Mikhelson and the President and CEO of KOGAS, Seung-Il Cheong.

According to the MoU, the parties agreed to explore opportunities for KOGAS to enter the Arctic LNG 2 project and possible LNG off-take from the project, participate in the LNG transshipment project in Kamchatka and other infrastructure projects, as well as develop co-operation in LNG trading and logistics optimisation, including swap operations.

Mikhelson explained: "The

Asian/Pacific markets are a priority destination for our LNG projects as this important geographical region represents the fastest growing markets for natural gas consumption, and South Korea is presently one of the largest importers of LNG.

"Our scalable LNG projects combined with our huge hydrocarbon resource base, our low cost LNG production and the further development of our logistics model using the Northern Sea Route and the transshipment terminal in Kamchatka create perfect opportunities for mutually beneficial co-operation for our potential partners.

"The competitiveness and attractiveness of our future LNG



Leonid Mikhelson

projects is once again confirmed with the signing of this MoU with KOGAS - one of the largest players on the Asian LNG market," he said. ■

For GNF read Naturgy

Gas Natural Fenosa, the Spanish utility and LNG market participant, has changed its name to Naturgy.

"This new name will cover the company's businesses in Spain and internationally and the new brand of the parent company will be Naturgy Energy Group," said Naturgy.

"We are highly aware that the world is changing," said CEO, Francisco Reyes. "The company is not starting from zero. We are already acknowledged as a friendly energy

company that is committed to its customers."

Naturgy recently discharged its first LNG cargo from Russia under a long-term contract.

The vessel was the 172,600 cu m LNGC 'Fedor Litke', which made an 11-day voyage from Siberia to the Reganosa terminal at Mugardos (La Coruña).

This is the first cargo of 37 ships per year, which will be coming to Spain to 2041 and forms part of the contract signed by GNF and Yamal LNG five years ago to import 3 billion cu m a year for 24 years, which represents 8% of the annual consumption of gas in the country. ■



The Arc7 'Fedor Litke' has shipped the first cargo of Yamal gas to Mugardos

NEWS NUDGE

Hoegh takes over Gard chair

Morten Høegh, Chairman of Høegh LNG has been elected Chairman of the Board of Gard P & I (Bermuda) Ltd, with immediate effect.

He took over from Bengt Hermelin who has held the position since 2013.

Michael Lykiardopulo of Neda Maritime Agency was elected as Deputy Chairman.

LNG STS operations in northern Norway?

Novatek is looking to start large-scale ship-to-ship LNG transfers at three sites in Arctic Norway, according to the Barents Observer.

In a letter sent to the Norwegian Directorate for Civil Protection (DSB), Norterminal requested permission to start operations in partnership with the Russian natural gas producer.

According to the letter, seen by the Barents Observer, Novatek needs to reload the gas, due to a mismatch in production capacity and export capacity. Novatek's Yamal LNG second train is scheduled to start production in November, 2018, but the company will not have the sufficient LNGCs to ship the cargoes.

Norterminal, a Norwegian company owned by Jacob Stolt Nielsen, said it was taking part in a tender circulated by Novatek, which has confirmed that the solution offered by the Norwegians is the best, according to the letter. ■

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PGNiG signs US LNG supply agreements

Polish oil and gas company PGNiG has signed long-term LNG delivery agreements with future US gas suppliers Port Arthur LNG and Venture Global LNG.

The agreement with Port Arthur LNG, a subsidiary of Semptra LNG & Midstream, relates to the terms of LNG deliveries from the Port Arthur liquefaction facility.

It defines basic terms and conditions of a 20-year contract to be finalised between the parties for the sales and purchase of two million tonnes per annum of LNG, which equals about 2.7 bill cu m per year of natural gas following regasification.

Cargoes will be supplied starting in 2023 from the Port Arthur LNG facility being developed in Jefferson County, Texas. The documents were signed at WGC.

"The Port Arthur liquefaction project is one of three major LNG export projects Semptra Energy is developing in North America to meet the demand of global markets, including Poland," said Joseph Householder, Semptra Energy's President and Chief Operating Officer. "This agreement

along with PGNiG's financial strength and experience in delivering natural gas to customers are important to advancing the Port Arthur liquefaction project."

"The signed agreement paves the way for finalising a contract that will help PGNiG to develop our LNG portfolio in the near future," commented Piotr Woźniak, CEO and President of PGNiG's Management Board. "Starting in 2023, LNG deliveries from the Port Arthur terminal can not only help us to further diversify our import structure, but will also help us in strengthening PGNiG's activities on the international LNG market.

"PGNiG is constantly looking for market offers to purchase natural gas at competitive prices. We are pleased to be able to co-operate with such an experienced partner as Semptra Energy," he added.

Deliveries will have the flexi-

bility to allow for further trading by PGNiG on international markets and will probably be supplied on a free-on-board (FOB) basis whereby PGNiG is responsible for transport of the cargoes from Port Arthur LNG.

This announcement follows the 2017 signing of a Memorandum of Understanding (MOU) with Korea Gas Corp (KOGAS) to provide a framework for co-operation, including engineering and construction, operations, equity ownership in the Port Arthur LNG liquefaction project, and offtake of LNG.

EPC contractor

A couple of weeks ago, Bechtel was chosen to be the engineering, procurement, construction and commissioning (EPC) contractor.

In addition, PGNiG and Venture Global LNG have entered into an agreement relating to the terms of delivery of liquefied natural gas from Calcasieu Pass LNG and

Plaquemines LNG facilities.

The Venture Global LNG agreement also defines the basic terms and conditions of a 20-year contract for two million tonnes per annum of LNG.

Cargoes will be supplied from Calcasieu Pass and Plaquemines LNG export facilities, which are due to be completed in 2022 and 2023 respectively. Both terminals will be located by the Gulf of Mexico in Louisiana.

Mike Sabel and Bob Pender, Venture Global LNG co-CEOs, jointly announced: "We are honoured to be partnering with PGNiG of Poland, one of Central Europe's leading utilities and suppliers of energy, as it secures the long-term supply of LNG. PGNiG will be joining our existing global partners Shell, Edison SpA, Galp and BP in our Calcasieu Pass project and become one of our foundation partners for Plaquemines LNG." ■

Extra Panama LNGC transit slots

At the recent World Gas Conference (WGC) in Washington, DC, the Panama Canal Authority confirmed plans to lift daylight and encounter restrictions to provide additional LNGC transit slots.

Deputy Administrator, Manuel Benitez announced that the changes will come into effect 1st October, 2018.

"Lifting daylight restrictions means LNG vessels will be able to transit the locks at night - as vessels in other segments currently do," explained Benitez during his presentation. "Lifting encounter restrictions means LNG vessels will be able to navigate Gatun Lake at the same time, allowing two different LNG vessels to transit the Canal the same day in two different directions.

"Together, these changes will provide more flexibility and time during the day to transit LNG vessels, and result in an opportunity for LNG shippers to compete for a

second booking slot," he said.

With the restrictions in place, the Panama Canal currently provides one dedicated reservation slot to LNGCs per day. This equates to seven dedicated LNGC booking slots per week, which is more than the current demand from LNG shippers, who average 5.5 transits per week.

In addition to the one dedicated slot, the Canal frequently works to cater for vessels that arrive without a prior reservation, allowing for the day's vessel mix.

Up to three LNGCs

The waterway has regularly transited two LNGCs in the same direction on the same day, and demonstrated the ability to transit

up to three vessels the same day in the same direction during periods of uncharacteristically high demand.

"By lifting these restrictions on 1st October, the Canal will unleash even more capacity for LNG," said Silvia de Marucci, executive manager, economic analysis and market research division at the conference. "In addition to the one reservation, it guarantees each day, the Canal will soon offer LNG shippers, for the first time, the opportunity to compete among our wider vessel segments to book a second daily slot."

The opportunity to compete for this new, second slot had not been available to LNG shippers before. And it will be offered on top of

the Canal's continued efforts to transit LNGCs that arrive early for their reservations or without one.

Over the past two years, the waterway has handled 372 LNGC transits. All LNGCs that arrived with reservations were transited on time, except for one, which arrived late. Of the 35 that arrived without a reservation, the Canal transited 30 of these ships the same day, and the remaining five transited within a limited waiting time.

At the end of June, there was no waiting time for LNGCs to transit the waterway, it was claimed.

According to the Canal authority, LNG transits are expected to grow by more than 50% by the end of 2018, compared to 2017. ■

Gastech

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FERC issues draft environmental impact statement for Calcasieu Pass

The US Federal Energy Regulatory Commission (FERC) has prepared a draft environmental impact statement (EIS) for the Calcasieu Pass LNG project.

The proposed project would include a new LNG export terminal and 23.4 miles of 42-inch-dia pipeline in Cameron Parish, Louisiana.

The terminal would include the following facilities:

- Liquefaction facilities;
- Two full-containment LNG above ground storage tanks, each with a usable capacity of around 200,000 cu m;
- A 720 MW electric generating plant;
- A marine terminal consisting of a

turning basin and LNGC berths;

- LNG piping;
- Transfer lines;
- Loading facilities; and
- Other infrastructure.

FERC concluded that construction and operation of the project would result in some adverse environmental impacts, but these impacts would be reduced to less-than-significant levels.

This determination was based on a review of the information provided by Venture Global LNG

and TransCameron Pipeline and further developed from data requests; field investigations; scoping; literature research; alternatives analyses; and contacts with the federal, state, and local agencies, native American tribes, and other stakeholders.

The draft EIS comment period closes on 13th August, 2018. The FERC Commissioners will take into consideration staff's recommendations when they make a decision on the Project. ■

MOL to offer FSRU for Hong Kong project

MOL will deliver the 2017-built 'MOL FSRU Challenger' with a storage capacity of 263,000 cu m, which is the largest FSRU in operation, for the project.

The FSRU was built by Daewoo Shipbuilding & Marine Engineering (DSME) and is currently employed on a mid-term charter for a Turkish project.

The Hong Kong offshore LNG terminal project will be located to the east of the Soko Islands. The FSRU is expected to start operations in Hong Kong around the end of 2020 at the earliest after her delivery and commissioning.

She will distribute gas into two sites in Hong Kong - the Black Point Power Station located at the New Territories and Lamma Power Station, located on Lamma Island.

The project is being developed to support the Hong Kong Special Administrative Region (HKSAR) Government's target of generating about half of the region's electricity from natural gas from 2020 onward to improve air quality and environmental conditions in the area.

An environmental impact assessment study for the project has been submitted to the Government. Discussions are also ongoing to develop and reach a definitive agreement on the FSRU's charter. ■

Gas cargo heads for Asia via NSR

The first Yamal LNG gas cargo to transit the Northern Sea Route (NSR) is destined for Asia, according to ICIS analytical tool LNG Edge.

The laden 172,000 cu m 'Vladimir Rusanov' left Sabetta on 25th June and was heading east through the Arctic, LNG Edge information showed on 26th June.

The Arc7 LNGC was expected to reach the eastern extremity of the NSR at Cape Dzhurzhnev on 6th July, according to Russia's North-

ern Sea Route Administration.

Since Yamal started production in late 2017, all cargoes thus far were destined for European receiving terminals, either for transshipment on conventional LNGCs to other terminals worldwide, or direct.

China received its first Yamal

cargo on 1st June via the longer European route, according to LNG Edge. The 170,000 cu m 'Pskov' lifted a Yamal cargo via a transfer at Zeebrugge and transited the Suez Canal to deliver it to Tianjin in China.

Yamal's first Arc7, the 172,000 cu m 'Christophe de Margerie', had delivered a cargo from Norway's Snøhvit LNG plant to Boryeong in South Korea via the NSR between July and August, 2017 unaided to test the route.

Before that, the 150,000 cu m 'Ob River' delivered a Snøhvit cargo to Tobata in Japan through the NSR between November and December, 2012. However, she was escorted by nuclear-powered icebreakers, according to ICIS. ■



The Arc7 'Vladimir Rusanov' is heading to Asia via the NSR

NEWS NUDGE

Suez reduces dues on ballasting LNGCs

The Suez Canal Authority (SCA) has changed the requirements for residue cargoes in ballasting LNGCs.

Under the new requirements, the amount of residue cargo that can be carried by an LNGC to still qualify for ballast vessel canal dues has increased from 2% of summer deadweight to 5% as

from 1st July.

In a circular, the SCA said that this move was made to encourage more LNGCs to transit the canal.

Market reports

Brokers have reported that the newbuilding 180,000 cu m 'LNG Schneeweisschen' had been timechartered to Cheniere Energy for nine months at \$90,000 per day.

They also said that Thenamaris had confirmed the order of a 174,000 cu m XDF powered LNGC at Hyundai Heavy Industries for 2020 delivery and that Capital was rumoured to have ordered four 175,000 cu m LNGCs, plus four options, for 2021 deliveries.

The price reported for the Thenamaris LNGC was \$185 mill and in the low \$180s mill for the Capital ships.

If the Capital order is con-

firmed, it will be the company's first foray into the LNGC market.

Maran Gas was also thought to have firmed up another 174,000 cu m FSRU option at Daewoo for first half 2021 delivery.

According to the Equasis database, the 174,000 cu m LNGC 'Flex Ranger' and the 173,400 cu m 'British Partner' were recently delivered from their respective newbuilding yards, as was the 165,000 cu m 'Diamond Gas Orchid' (see ABS news story). ■

Golar repays post acceptance debt financing for FLNG

Golar LNG Limited has repaid the \$640 mill drawn under the \$700 mill construction financing facility for the FLNG 'Hilli Episeyo'.

This was also drawn down on the post acceptance \$960 mill lease financing facility provided by CSSC Leasing.

After the closing, therefore an additional \$320 mill of liquidity was received by Golar.

This repayment follows the 4th June commercial acceptance of the FLNG 'Hilli Episeyo', the company said.

The net increase in liquidity to Golar after settling remaining 'Hilli Episeyo' capital commitments, as well as amounts due to minority (10.89%) shareholders, Keppel and Black and Veatch, as a result of the debt draw down, is expected to be about \$200 mill.

This is based upon the expectation that a significant amount of the contingency fund will not be required, Golar explained.

The drop down of 50% of the base tolling income to Golar LNG Partners is expected to be concluded shortly.

The additional added contribution of around \$82 mill in effective EBITDA and effective EBITDA backlog of \$650 mill, given the eight year contract period, will significantly strengthening the MLP's financial position and support the distribution going forward.

Golar CEO, Iain Ross, commented: "We are delighted to have closed this financing and with the support and good relationship we have with CSSC leasing.

"With the announcement in April of the closing of the Sergipe financing, we are now in a position that all our major capital commitments are fully funded, with the only exception being the FSRU 'Nanook', which has a 25-year charter and on which financing discussions are well advanced.

"In addition to being fully funded, the company's liquidity is also significantly improved," he added.

NEWS NUDGE

Trafigura signs US gas sales agreement

Trading house Trafigura has signed another sales agreement for US LNG this time with Freeport LNG Marketing.

A binding mid-term sales and purchase agreement (SPA) was agreed for 0.5 mill tonnes per annum to be supplied from Freeport LNG's loading facility on Quintana Island, near Freeport, Texas.

The latest Trafigura SPA will commence on 1st July, 2020, soon after the expected completion of construction of Freeport LNG's third liquefaction train.

CPC in 25-year co-operation with Cheniere

Taiwan's CPC Corp (CPC) and US-based Cheniere Energy have signed a Heads of Agreement (HOA) for a 25-year LNG sales and purchase co-operation.

Under the HOA, Cheniere will supply 2 mill tonnes per annum to CPC.

CPC said that the agreement would strengthen its co-operation with Cheniere in regard to its development of LNG liquefaction and export projects in North America.

CPC and Cheniere will continue negotiations towards an LNG sales and purchase agreement (SPA) over the coming period.

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Trelleborg equips Indian FSRU

Trelleborg's marine systems operation has supplied a suite of products to H-Energy's FSRU-based LNG terminal at JSW Infrastructure's Jaigarh Port in Ratnagiri District, Maharashtra.

Developed in accordance with engineering and safety standards and with an annual capacity of four million tonnes per annum, H-Energy's LNG terminal will be equipped for storage, re-gasification, re-loading, fuel bunkering and truck loading to cater to the growing energy

demand of Indian industries.

When operational in the fourth quarter of this year, the re-gasified LNG will be supplied to customers, through a 60 Km long tie-in pipeline, which will connect to the national gas grid at Dabhol.

Trelleborg supplied its quick release hook units, an environ-

mental monitoring system, a SmartDock docking aid system and a central integrated monitoring system.

ManMohan Ahuja, H-Energy Project Director, commented: "With India being one of the fastest growing countries across the globe, its energy consumption continues to rise at a rapid rate. Therefore, the country's need for clean, safe and affordable fuel has never been greater. Marking a significant milestone for the development of port-based industries and social infrastructure across India, the country's first FSRU based LNG terminal at Jaigarh Port aims to deliver exactly that.

"Trelleborg's unrivalled LNG track record, reputation and technical qualification meant the company was a natural choice to

supply the project," he said.

The project was managed by Trelleborg's team in Melbourne, while engineers from the company's engineering and design centre of excellence in Ahmedabad, India, carried out the inspection and commissioning of the mooring equipment and attended the successful berthing of the FSRU.

These products supplied by Trelleborg fall under the company's SmartPort portfolio. SmartPort by Trelleborg is the company's answer to the need for a standardised way to collect, store, analyse and present data.

It's a technology platform that seeks to connect all aspects of port operations, allowing users to analyse asset performance and apply data insights, to improve day-to-day decision making, the company explained. ■



Trelleborg is supplying critical equipment for the H-Energy FSRU project

LR adds expertise to Mozambique FLNG project

Lloyd's Register (LR) is supporting Mozambique's Coral South FLNG project.

LR is undertaking covers design, procurement, certification, construction, integration and commissioning, as well as providing classification services under a risk based inspection regime to the FLNG when it enters into service in 2022.

The Coral South field is being developed by Eni in Area Four of the Rovuma Basin, off the coast of Mozambique. The FLNG will be Africa's first floating gas facility. Coral South contains about 450 billion cu m of gas.

This unit will be the world's first ultra-deepwater FLNG, operating at a depth of 2,000 m. It is expected to produce around 3.4 million tonnes of LNG per year. The FLNG will be about 430 m long, 66 m wide, and will be of about 210,000 tonnes. It has a design life of 25 years.

LR has been involved in the

project since 2014, and in 2015 awarded a first Approval in Principle (AiP) for the design. LR has set up a global team dedicated to the project to help ensure a common approach is delivered globally for the design, engineering, operational and business development support required by Eni and its project partners and will be heavily involved throughout the entire supply chain.

The project is currently in a detailed engineering design phase, with the bulk of design work being undertaken in South Korea, France and Japan. LR is required to deliver a number of design appraisal documents as part of this phase.

All the equipment, systems and machinery that make up the topside plant on the FLNG will be certified by LR. To complete this, LR will be holding more than 500 contracts with equipment vendors

directly and will be delivering services in all vendor locations. This will result in all the equipment arriving in South Korea certified by LR to agreed codes and standards.

Upon completion of construction, the FLNG will be towed from South Korea to Mozambique and LR will be in attendance to wit-

ness the hook up of the mooring system and to survey the commissioning of the topside plant on station.

LR site surveyors will also confirm that the unit is installed and commissioned in accordance with its rules and the industry codes and standards that it is designed to. ■



LR is advising the Mozambique FLNG project

EPC partners named for Mexican export project

Sempra LNG & Midstream, a subsidiary of Sempra Energy, has confirmed that a TechnipFMC and Kiewit partnership was chosen as the engineering, procurement, construction and commissioning (EPC) contractor for the Energía Costa Azul (ECA) liquefaction project under development in Baja California, Mexico.

The partnership will perform the engineering, planning and related activities necessary to prepare, negotiate and finalise a lump-sum EPC contract for the project.

"The ECA liquefaction project is one of three North American LNG export projects we are developing - two on the Gulf Coast and one in the Pacific Basin - to help meet global demand for LNG," said Joseph Householder, President and COO of Sempra Energy. "This project is an exciting part of our LNG growth strategy and geographically positioned to serve Asian natural gas markets."

With a permit allowing it to be built adjacent to the existing ECA regasification facility, the liquefaction project is being developed

by Sempra Energy to provide customers with direct access to west coast LNG supplies.

"Having two highly qualified construction companies, TechnipFMC and Kiewit, with international liquefaction experience will contribute to the project's success," said Octavio M C Simoes, president of Sempra LNG & Midstream. "ECA liquefaction will help us achieve our LNG development objectives of having a world-class LNG export terminal on the west coast of North America."

Its development is currently contingent upon: obtaining customer commitments; completing the required commercial agreements (including a definitive EPC contract); securing all necessary

permits and approvals; obtaining financing and incentives; reaching a final investment decision (FID); and other factors associated with the investment and the size, phasing and schedule of the development.

In addition to this development, Sempra LNG & Midstream is developing a three-train, 14 mill tonnes per annum liquefaction facility at Cameron LNG in Hackberry, La, that is currently under construction.

Recently, Sempra announced that Bechtel was selected as the EPC contractor for a third project, Port Arthur LNG, a two-train 11 mill tonnes per annum liquefaction facility in Port Arthur, Texas.

Completion of these projects is subject to a number of risks and uncertainties, Sempra said. ■

GTT wins more South Korean shipyard orders

GTT has received two orders from Daewoo Shipbuilding and Marine Engineering (DSME) to design the tanks for four new 174,000 cu m LNGCs.

These orders, involving two units each, will be built for two European shipowners, whose names remain confidential at this stage, GTT said.

The four LNGCs will each be equipped with a NO96 GW membrane containment system. The deliveries are expected by the end of 2020 for the first order and early 2021 for the second.

Philippe Berterottière, GTT Chairman and CEO, said: "We entertain, with DSME, a privileged and long lasting relationship. We are pleased to bring, once more, our technology and expertise to such a project."

In addition, GTT has received an order from Samsung Heavy Industries (SHI) to equip a new LNGC with a Mark III Flex membrane containment system.

With a capacity of 180,000 cu m, this LNGC will be built at Samsung for Gaslog.

Its delivery is scheduled for 3Q20.

Berterottière said: "We are very pleased with this order, which celebrates the quality of our relationship with these major players of the shipping industry. The choice, once again, of our Mark III Flex technology shows that this system perfectly matches the current needs of the market." ■

ABS in LNGC first

The ABS-classed 'Diamond Gas Orchid', the world's first 'Sayaringo STaGE' type LNGC, has been delivered to Diamond LNG Shipping, a joint venture between Mitsubishi Corp and NYK.

"As a global leader in LNG, ABS is proud to support continued innovation in the sector and help advance another industry first," said ABS Senior Vice President and Chief Business Development Officer, Jamie Smith. "With newly designed cargo tanks and a hybrid propulsion, this next generation carrier can carry more LNG and minimise fuel costs."

Ordered by Diamond LNG Shipping through MI LNG Co, Ltd, built by Nagasaki-based Mitsubishi Heavy Industries Marine Structure, the LNGC introduces significant improvements in both LNG-carrying capacity and fuel performance by incorporating a more efficient hull structure and an innovative hybrid propulsion system, ABS claimed.

The vessel was built to ship LNG for the Cameron LNG project.

"The 'Diamond Gas Orchid' features the latest in marine innovation with its optimised transport capacity, fuel efficiency and envi-

ronmental performance," said ABS Vice President for Japan, Akira Akiyama. "Working closely with all of the stakeholders throughout the project, we were able to help Diamond LNG Shipping demonstrate the viability of the concept and develop a highly efficient and innovative vessel."

'Diamond Gas Orchid' has a continuous steel cover that reduces ship weight and air resistance while increasing LNG-carrying capacity. STaGE, an acronym derived from 'Steam

Turbine and Gas Engines,' is a hybrid propulsion system combining a steam turbine and engines fired by gas.

Efficient use of the engines' waste heat in the steam turbine results in substantial improvement in plant efficiency, enabling high-efficiency navigation throughout a full range of speeds.

'Diamond Gas Orchid' is the first Sayaringo STaGE vessel to have both the next generation LNG cargo tank structure and propulsion system, ABS said. ■



ABS has classed the Sayaringo STaGE 'Diamond Gas Orchid'

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WORLD LNG CARRIER ORDERBOOK

Name	Yard	Containment System	Capacity	Propulsion	Delivery Date	Ordered	Primary Owner
Pan Europe	Hudong-Zhonghua	GT NO 96	174000	TFDE	01/06/2018	2014	Teekay LNG
Megara	DSME	GT NO 96	173400	MEGI	01/07/2018	2014	Teekay LNG
Flex Rainbow	Samsung	TZ Mk. III	174000	MEGI	25/07/2018	2013	Flex LNG
LNG Schneeweisschen	DSME	GT NO 96	180000	TFDE	31/07/2018	2015	MOL
Rudolf Samoylovich	DSME	GT NO 96	172410	TFDE - Azipod	01/08/2018	2014	Teekay LNG
Energy Liberty	Japan Marine United Corp	SPB	165000	TFDE	01/08/2018	2014	MOL
Diamond Gas Rose	Mitsubishi H.I.	Moss	165000	STaGE	01/08/2018	2015	NYK
Enshu Maru	Kawasaki	Moss	164000	STRH	30/08/2018	2014	K-Line
Castillo De Caldelas	Imabari	TZ Mk. III	178000	MEGI	01/09/2018	2014	Elcano
Vladimir Vize	DSME	GT NO 96	172410	TFDE - Azipod	01/09/2018	2014	MOL
Kinisis	DSME	GT NO 96	173400	MEGI	15/09/2018	2015	Chandris
British Achiever	DSME	GT NO 96	173400	MEGI	01/10/2018	2014	BP
Georgiy Brusilov	DSME	GT NO 96	172410	TFDE - Azipod	01/10/2018	2014	Dynagas
Marvel Eagle	Kawasaki	Moss	155000	TFDE	19/10/2018	2014	MOL
Jmu Tsu 5071	Japan Marine United Corp	SPB	165000	TFDE	01/11/2018	2014	NYK
British Contributor	DSME	GT NO 96	173400	MEGI	01/11/2018	2014	BP
Boris Davydov	DSME	GT NO 96	172410	TFDE - Azipod	01/11/2018	2014	Dynagas
Marvel Hawk	Samsung	GTT Mark III Flex	174000	XDF	01/12/2018	2014	MOL
Marvel Crane	Mitsubishi H.I.	Moss	177000	STaGE	01/12/2018	2015	NYK
Nikolay Zubov	DSME	GT NO 96	172410	TFDE - Azipod	01/12/2018	2014	Dynagas
Samsung 2150	Samsung	GTT Mark III Flex	174000	XDF	01/01/2019	2014	MOL
Maran Gas Spetses	DSME	GT NO 96	173400	MEGI	01/01/2019	2015	Maran Gas Maritime
Daewoo 2444	DSME	GT NO 96	173400	MEGI	01/01/2019	2014	BP
Mitsubishi Nagasaki 2323	Mitsubishi H.I.	Moss	177000	STaGE	01/01/2019	2015	MOL
Maran Gas Chios	DSME	GT NO 96	173400	MEGI	01/01/2019	2015	Maran Gas Maritime
Maran Gas Hydra	DSME	GT NO 96	173400	MEGI	01/01/2019	2015	Maran Gas Maritime
Hyundai Samho S856	Hyundai Heavy	TZ Mk. III	174000	MEGI	01/01/2019	2015	Teekay LNG
Gaslog Gladstone	Samsung	TZ Mk. III	174000	XDF	01/01/2019	2014	GasLog
Yamal Spirit	Hyundai Heavy	TZ Mk. III	174000	MEGI	01/01/2019	2015	Teekay LNG
Pan Africa	Hudong-Zhonghua	GT NO 96	174000	TFDE	01/01/2019	2014	Teekay LNG
Shinshu Maru	Kawasaki	Moss	177000	STRH	01/02/2019	2015	MOL
British Mentor	DSME	GT NO 96	173400	MEGI	01/02/2019	2014	BP
Nohshu Maru	Mitsubishi H.I.	Moss	180000	STaGE	01/02/2019	2015	NYK
Jmu Tsu 5072	Japan Marine United Corp	SPB	165000	TFDE	01/03/2019	2014	MOL
British Sponsor	DSME	GT NO 96	173400	MEGI	01/03/2019	2014	BP
Hyundai Ulsan 2937	Hyundai Heavy	GTT Mark III Flex	180000	XDF	01/04/2019	2016	SK Shipping
Diamond Gas TBN	Mitsubishi H.I.	Moss	165000	STaGE	01/05/2019	2015	Mitsubishi
Hyundai Ulsan 2964	Hyundai Heavy	GTT Mark III Flex	180000	MEGI	01/05/2019	2017	Knutsen
Bushu Maru	Mitsubishi H.I.	Moss	180000	STaGE	01/06/2019	2015	NYK
Flex Constellation	DSME	GT NO 96	173400	MEGI	01/06/2019	2017	Flex LNG
Hyundai Ulsan 2963	Hyundai Heavy	GTT Mark III Flex	180000	MEGI	01/06/2019	2017	Knutsen

DFDE = dual fuel diesel engines, STRH = steam turbine reheat / ultra steam turbine, MEGI = marine electric gas injection, DRL = slow speed diesel, FSRU = vessel with regas capacity, FLNG = floating LNG production unit
Data last updated = 6th June 2018

Name	Yard	Containment System	Capacity	Propulsion	Delivery Date	Ordered	Primary Owner
Sohshu Maru	Kawasaki	Moss	177000	STRH	01/07/2019	2015	MOL
Hyundai Ulsan 2938	Hyundai Heavy	GTT Mark III Flex	180000	XDF	01/07/2019	2016	SK Shipping
Jmu Tsu 5073	Japan Marine United Corp	SPB	165000	TFDE	01/07/2019	2014	MOL
Daewoo 2430	DSME	GT NO 96	172000	TFDE - Azipod	01/07/2019	2014	Teekay LNG
Maran Gas Syros	DSME	GT NO 96	173400	MEGI	01/07/2019	2014	Maran Gas Maritime
Gaslog Windsor	Samsung	GTT Mark III Flex	180000	XDF	01/07/2019	2017	GasLog
Kawasaki Sakaide 1729	Kawasaki	Moss	155000	TFDE	01/08/2019	2014	MOL
Daewoo 2431	DSME	GT NO 96	172000	TFDE - Azipod	01/08/2019	2014	Teekay LNG
Flex Courageous	DSME	GT NO 96	173400	MEGI	01/08/2019	2017	Flex LNG
Daewoo 2432	DSME	GT NO 96	172410	TFDE - Azipod	01/09/2019	2014	MOL
Mitsubishi Nagasaki 2322	Mitsubishi H.I.	Moss	177000	STaGE	01/09/2019	2015	MOL
Daewoo 2466	DSME	GT NO 96	173400	MEGI	01/10/2019	2016	Maran Gas Maritime
Daewoo 2433	DSME	GT NO 96	172000	TFDE - Azipod	01/10/2019	2014	Teekay LNG
Daewoo 2467	DSME	GT NO 96	173400	MEGI	01/11/2019	2016	Maran Gas Maritime
Daewoo 2489	DSME	GT NO 96	173400	MEGI	01/11/2019	2015	BWGas
Daewoo 2434	DSME	GT NO 96	172000	TFDE - Azipod	01/11/2019	2014	Teekay LNG
MOL HUDONG-ZHONGHUA 1/4	Hudong-Zhonghua	GT NO 96	174000	MEGI	01/12/2019	2017	MOL
DSME 2490	DSME	GT NO 96	173400	MEGI	01/02/2020	2018	BWGas
MOL HUDONG-ZHONGHUA 2/4	Hudong-Zhonghua	GT NO 96	174000	MEGI	01/03/2020	2017	MOL
HHI NYK/EDF	Hyundai Heavy	GTT Mark III Flex	174000	XDF	30/04/2020	2018	NYK
DSME 2491	DSME	GT NO 96	173400	MEGI	01/05/2020	2018	BWGas
Daewoo 2478	DSME	GT NO 96	173400	MEGI	31/05/2020	2017	Maran Gas Maritime
Samsung 2213	Samsung	GTT Mark III Flex	180000	XDF	01/06/2020	2016	GasLog
HHI / Total	Hyundai Heavy	GTT Mark III Flex	174000	XDF	01/06/2020	2018	Cardiff Marine
HHI / Total / Sovc	Hyundai Heavy	GTT Mark III Flex	174000	XDF	01/06/2020	2018	Sovcomflot
HHI / Cardiff #1	Hyundai Heavy	GTT Mark III Flex	174000	XDF	01/06/2020	2018	Cardiff Marine
HHI / Cardiff #2	Hyundai Heavy	GTT Mark III Flex	174000	XDF	01/06/2020	2018	Cardiff Marine
Flex Aurora	Hyundai Heavy	GTT Mark III Flex	174000	XDF	01/06/2020	2018	Flex LNG
SHI Gaslog #1	Samsung	GTT Mark III Flex	180000	XDF	01/06/2020	2018	GasLog
Hyundai Ulsan 3086	Hyundai Heavy	GTT Mark III Flex	180000	MEGI	01/06/2020	2018	Knutsen
Daewoo 2469	DSME	GT NO 96	173400	MEGI	30/06/2020	2016	Maran Gas Maritime
MOL HUDONG-ZHONGHUA 3/4	Hudong-Zhonghua	GT NO 96	174000	MEGI	01/07/2020	2017	MOL
DSME 2479	DSME	GT NO 96	173400	MEGI	01/08/2020	2018	John Fredriksen
Flex America	Hyundai Heavy	GTT Mark III Flex	174000	XDF	01/08/2020	2018	Flex LNG
DSME 2480	DSME	GT NO 96	173400	MEGI	01/09/2020	2018	John Fredriksen
SHI Gaslog #2	Samsung	GTT Mark III Flex	180000	XDF	01/09/2020	2018	GasLog
MOL HUDONG-ZHONGHUA 4/4	Hudong-Zhonghua	GT NO 96	174000	MEGI	01/10/2020	2017	MOL
DSME 2483	DSME	GT NO 96	173400	MEGI	01/10/2020	2018	Alpha Gas
DSME 2484	DSME	GT NO 96	173400	MEGI	01/12/2020	2018	Alpha Gas
DSME Minerva #1	DSME	GT NO 96	173400	MEGI	01/03/2021	2018	Minerva Marine
DSME Minerva #2	DSME	GT NO 96	173400	MEGI	01/07/2021	2018	Minerva Marine

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 / Lucia Ambition	18,928	LNG	Malaysia - Japan	Yes	Perbadanan/NYK
1996	Surya Aki	19,475	LNG	Indonesia - Japan	Yes	MCGC
1997	Aman Sendai	18,928	LNG	Malaysia - Japan	Yes	Perbadanan/NYK
1998	Aman Hakata	18,800	LNG	Malaysia - Japan	Yes	Perbadanan/NYK
2000	Tripura (ex Surya Satsuma)	23,096	LNG	Indonesia - Japan	Yes	MCGC
2003	Pioneer Knutsen	1,100	LNG	Norway	Yes	Knutsen
2003	Shinju Maru No.1	2,540	LNG	Japan	Yes	Shinwa
2005	North Pioneer	2,500	LNG	Japan	Yes	Japan Liquid Gas
2007	Sun Arrows	19,531	LNG	Malaysia - Russia - Japan	Yes	Mitsui
2008	Kakurei Maru	2,536	LNG	Japan	Yes	Hogaki Zosen
2008	Shinju Maru No.2	2,540	LNG	Japan	Yes	Shinwa
2009	Coral Methane	7,551	LNG/LPG/Ethylene	Northwest Europe/Baltics	Yes, sometimes	Anthony Veder
2010	Norgas Creation	10,000	LNG/LPG/Ethylene	Worldwide	No	Norgas Carriers
2010	Norgas Innovation	10,000	LNG/LPG/Ethylene	Worldwide	No	Norgas Carriers
2011	Akebono Maru	3,556	LNG	Japan	Yes	Chuo Kaiun
2011	Norgas Conception	10,000	LNG/LPG/Ethylene	Worldwide	No	Norgas Carriers
2011	Norgas Invention	10,000	LNG/LPG/Ethylene	Worldwide	No	Norgas Carriers
2011	Vision Spirit	12,000	LNG/LPG/Ethylene	Worldwide	No	Teekay
2011	Unikum Spirit	12,000	LNG/LPG/Ethylene	Worldwide	No	Teekay
2012	Coral Energy	15,600	LNG	Northwest Europe/Baltics	Yes	Anthony Veder
2013	JX Energy TBN	2,500	LNG	Japan	Yes	JX Energy
2013	Kakuyu Maru	2,500	LNG	Japan	Yes	Tsurumi Sunmarine
2013	Coral Anthelia	6,500	LNG/Ethylene			Anthony Veder
2014	LNG-Oil combi**	2,000	LNG	Germany	Yes	Veka
2014	Short Sea LNG Tanker **	4,000	LNG	Germany	Yes	Veka
2015	LNG Inland bunker**	800	LNG	Germany	Yes	Veka
2015	LNG bunker barge 1†	2,250	LNG	China	Yes	Anhui Huaqiang Natural Gas
2015	LNG bunker barge 2†	2,250	LNG	China	Yes	Anhui Huaqiang Natural Gas
2015	LNG bunker barge 3†	2,250	LNG	China	Yes	Anhui Huaqiang Natural Gas
2015	LNG Barge TBN	3,000	LNG	US Coast	Yes	LNG America
2015	10 small carriers TBN**	5,000	LNG			Bimantara Group
2015	Jahre TBN**	6,200	LNG	Norway	Yes	Donsotank/Jahre Marine
2015	Norgas TBN**	17,000	LNG/LPG/Ethylene	Worldwide		Norgas Carriers
2015	Norgas TBN**	17,000	LNG/LPG/Ethylene	Worldwide		Norgas Carriers
2015	JS Ineos Ingenuity	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2015	JS Ineos Insight	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2015	JS Ineos Intrepid	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2015	TBN 1	27,500	LNG	China?		Danyang?
2015	TBN 2	27,500	LNG	China?		Danyang?
2015	TBN 3	27,500	LNG	China?		Danyang?
2015	PetroChina TBN	30,000	LNG	China		PetroChina
2016	Clean Jacksonville	2,200	LNG	US Coast	Yes	CME
2016	LNG Prime	2,250	LNG	Northwest Europe	Yes	Veka Deen LNG
2016	HUA XIANG 8	13,720	LNG	China	Yes	Zhejiang Huaxiang
2016	JS Ineos Indepence	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2016	JS Ineos Innvation	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2016	JS Ineos Inspiration	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2016	Hai Yang Shi You 301	30,000	LNG	Bali FSU	Yes	CETS (CNOOC)
2016	Navigator Aurora	35,000	Ethane/Ethylene	Markus Hood - Stenungsund	Ethane, for Borealis	Navigator
2016	Gaschem Beluga	36,000	Ethane/Ethylene	US - Teeside	Ethane, for Sabic	Gaschem Services
2016	Gaschem Orca	36,000	Ethane/Ethylene	US - Teeside	Ethane, for Sabic	Gaschem Services
2016	Ocean Yield TBN**	36,000	Ethane/Ethylene	US - Teeside	Ethane, for Sabic	Gaschem Services

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

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

** = project shelved † = Data to be verified Data last updated = 6th June 2018

Built	Name	CBM	Cargo Type	Trading area	Trading in LNG?	Ship Owner / Operator
2017	Oizmendi	600	LNG	Bilbao	Yes	Itsas Gas
2017	CME TBN†	2,200	LNG	US Coast	Yes	CME
2017	CME TBN†	2,200	LNG	US Coast	Yes	CME
2017	ENGIE Zeebrugge	5,000	LNG	Northwest Europe	Yes	NYK
2017	Coralius	5,800	LNG	Northwest Europe/Baltics	Yes, for Skangas	Anthony Veder
2017	Cardissa	6,500	LNG	Northwest Europe	Yes	Shell
2017	LNG-Gorskaya TBN	7,300	LNG	Russia	Yes	LNG-Gorskaya
2017	LNG-Gorskaya TBN	7,300	LNG	Russia	Yes	LNG-Gorskaya
2017	LNG-Gorskaya TBN	7,300	LNG	Russia	Yes	LNG-Gorskaya
2017	Coral EnergiICE	18,000	LNG	Northwest Europe/Baltics	Yes	Anthony Veder
2017	JS Ineos Invention	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2017	JS Ineos Intuition	27,500	LNG/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2017	Yuan He 1	30,000	LNG	China	Yes	CSR
2017	Navigator Eclipse	35,000	Ethane/Ethylene	US	Ethane	Navigator
2017	Navigator Nova	35,000	Ethane/Ethylene	US	Ethane	Navigator
2017	Navigator Prominence	35,000	Ethane/Ethylene	US	Ethane	Navigator
2018	CME TBN†	2,200	LNG	US Coast	Yes	CME
2018	Shell Bunker Barge TBN 4	3,000	LNG	Northwest Europe	Yes	Shell
2018	Shell Bunker Barge TBN 2	6,500	LNG	Northwest Europe	Yes	Shell
2018	Shell Bunker Barge TBN 3	6,500	LNG	Northwest Europe	Yes	Shell
2018	Kairos	7,500	LNG	Baltic	Yes	Bernhard Schulte
2018	Qi Yuan	28,000	LNG	China	Yes	Dalian Inteh Group
2018	Evergas TBN	32,000	Ethane/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2018	Evergas TBN	32,000	Ethane/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2018	Evergas TBN	32,000	Ethane/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2018	Evergas TBN	32,000	Ethane/Ethylene	Markus Hook - Rafnes	Ethane, for Ineos	Evergas
2018	Bunker Breeze	0	LNG	Barcelona	Yes	Suardiaz Energy Shipping
2019	KLine TBN	7,500	LNG	Korea	Yes	Korea Line
2019	KLine TBN	7,500	LNG	Korea	Yes	Korea Line
2019	Stolt TBN	7,500	LNG	Mediterranean	Yes	Stolt-Nielsen Gas
2019	Stolt TBN	7,500	LNG	Mediterranean	Yes	Stolt-Nielsen Gas
2020	Shell Bunker Barge	4,000	LNG	US Coast	Yes	Q-LNG Transport / Harvey Gulf
2020	Stolt TBN (option)	7,500	LNG		Yes	Stolt-Nielsen Gas
2020	Stolt TBN (option)	7,500	LNG		Yes	Stolt-Nielsen Gas
2020	Total TBN	18,600	LNG	NWE	Yes	MOL
2020	FuelLNG TBN	7,500	LNG	Singapore	Yes	FuelLNG
2021	Stolt TBN (option)	7,500	LNG		Yes	Stolt-Nielsen Gas

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