

LNG Unlimited

LNG JOURNAL PUBLICATION

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Shanghai Petroleum and Gas trade platform makes LNG pricing effort

Chinese city's energy trading platform has been disappointing so far
LNG Journal editor

The Shanghai Petroleum and Gas Exchange is planning an LNG cargo auction on April 18 in a pricing exercise as the Asian region still awaits the emergence of a single benchmark price.

China National Offshore Oil Corp (CNOOC), the oil and gas company and LNG terminal owner, is planning to conduct the sale of two cargoes with expected delivery dates in July and November 2018.

Third-party sale

CNOOC is the first of China's energy majors and import terminal owners to sell a shipment of LNG to a third party in an auction.

The Chinese company said the cargoes would be delivered from the Ningbo import terminal in the eastern Zhejiang province.

The Ningbo terminal has been in operation since 2012 and is one of eight regasification and storage facilities owned by CNOOC out of 16 in the Chinese network.

The Shanghai Petroleum and Gas Exchange first opened its doors in March 2015.

However, trading volumes have been low in comparison to other exchange platforms in Europe and the US.

The Shanghai exchange has 10 major shareholders, including CNOOC, China National Petroleum Corp., China Petroleum & Chemical Corp., known as Sinopec, the China Economic Information Service and other state and regula-



China National Petroleum Corp. Chairman Wang Yilin at the 2017 launch of the Shanghai Petroleum Gas Exchange

tory bodies. It was set up with the aim of establishing a single Asian natural gas price or LNG price benchmark, though such a price has yet to emerge, even as the Singapore Exchange and companies such as US energy price assessment firm Platts have come up with the SGX LNG price and the Japan Korea Marker for LNG respectively.

Energy traders in Asia and elsewhere are awaiting a single daily pricing mechanism that can be used in hedging activities to limit losses or improve gains.

The Singapore Exchange in December 2017 cleared the first futures contract for LNG delivered into the Dubai, Kuwait and India (DKI) index market at a price of US\$9.85 per million British thermal units.

A total of 100,000 MMBtus of the February 2018 Futures traded and cleared at the price.

The futures were brokered by inter-dealer global brokerage Tullett Prebon, whose headquarters are in London, and traded by Italian energy company Eni and lead-

ing commodities firm Trafigura.

China also announced plans at the end of 2017 to launch a second natural gas exchange in the southwest city of Chongqing by mid-2018.

The Chongqing Oil and Gas Exchange company said it would provide a trading platform for domestic output, pipeline imports from Central Asia and Burma and imports of LNG.

The Chongqing Exchange, led by a board of nine directors including a former PetroChina executive, is scheduled to start operations with electronically-based spot trading of pipeline gas and LNG.

It was registered in July 2017 with 1 billion yuan (\$150 million) of capital in Chongqing, located far in land on the upper reaches of the Yangtze River and at the eastern edge of the Sichuan Basin, a prolific shale-gas region.

The Exchange said it now had a team of 50 working on the launch, including former market developers at state-owned energy companies.

UNLIMITED AGENDA

LIQUEFCTION

ExxonMobil posts higher reserves for key gas field in PNG expansion

2

FUEL MARKET

Fluxys takes over LNG quayside bunker service at Antwerp port

3

SHIPPING

LNG fuel project of Arista line plans to order 20 new bulk carriers

5

UPSTREAM

Queensland plants plan joint gas development in Bowen Basin

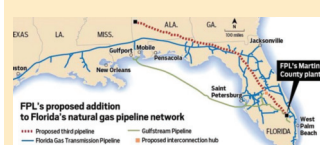
6

TECHNOLOGY

Air Liquide broadens LNG activities with boil-off system

7

PIPELINES



Florida Gas gets approval for East-West link to Gulf LNG plants

9

ExxonMobil says revised feed-gas reserves for PNG LNG will have lasting impact for nation

LNG Journal editor

ExxonMobil Corp., operator of the Papua New Guinea liquefied natural gas export plant near Port Moresby, has announced a more than 80 percent increase in estimated reserves in a key natural gas field underpinning the LNG expansion in the Oceania nation and said it would have a lasting economic impact for the people of PNG.

The US major said its P'nyang field in PNG had increased its resource base by 84 percent to 4.36 trillion cubic feet since a previous field assessment was carried out in 2012.

Certification

ExxonMobil said the independent recertification study by Netherland Sewell and Associates follows the successful completion in January 2018 of the P'nyang South-2 well, located in the Western Province of PNG.

"The results support ExxonMobil's discussions with its joint venture partners on a three-Train expansion concept for the PNG



The P'nyang natural gas field is in the top left of map

LNG plant with one new Train dedicated to gas from the P'nyang and PNG LNG fields and two Trains dedicated to gas associated with the Papua LNG project," explained the US company.

"The increase in the estimated resource size of the P'nyang field helps illustrate the tremendous growth opportunities for our operations in Papua New Guinea," said Liam Mallon, president of ExxonMobil Development Co.

"We are working closely with our joint venture partners and the

government to progress the P'nyang field development proposal and secure the licenses needed to develop this world-class resource," added Mallon.

The PNG LNG plant is currently closed as related infrastructure is steadily brought back on stream after being damaged in February's earthquake.

The PNG LNG expansion project would add approximately 8 million tonnes per annum of production and double current output to 16 MTPA.

"This investment would extend our gas pipeline infrastructure into the country's Western Province and have a meaningful and lasting economic impact for Papua New Guinea and its people," stated Mallon.

The P'nyang gas field is located within petroleum retention license 3, which covers 105,000 acres (425 square kilometres).

ExxonMobil operates the licence with a 49 percent interest in the block. Australian-listed company Oil Search has a 38.5 percent interest and Japanese energy company JX Nippon has a 12.5 percent stake.

The partners in the Papua LNG venture linked to the expansion are also seeking to commercialize the Elk-Antelope fields located in petroleum retention licence 15 in the Gulf Province of PNG.

ExxonMobil affiliate holds a 37.1 percent interest in the Elk-Antelope assets while French energy major Total and Oil Search have 40.1 percent and 22.8 percent stakes respectively.

BP proceeds with new natural gas project in Oman to help underpin LNG and domestic needs

BP of the UK said it had approved the development with Oman Oil Company of the Ghazeer project in the Sultanate of Oman as the second phase of the giant Khazzan natural gas venture in the Arabian Peninsula nation that has helped revive LNG production.

"The final investment decision for Ghazeer follows the successful start-up of Khazzan's first phase of development in September 2017," said BP.

"This project, which started production ahead of schedule and under budget, is now producing at design capacity of around 1 billion cubic feet of gas a day (bcf/d) and around 35,000 barrels a day of condensate," added the UK energy

major. The country's three liquefaction Trains at the facilities near Sur are expected to be at full capacity for the whole of 2018 after suffering several years of domestic gas shortages.

The Omani government allocates Oman LNG supplies from various gas fields and the Khazzan field production has ended all future feed-gas concerns.

The three Omani processing Trains are now almost at full capacity of 10.5 million tonnes per annum.

Additionally, in January 2018, Oman LNG signed a sales and purchase agreement with BP to supply shipments to the UK company's Singapore-based trading unit.

Oman LNG said the agreement was for free-on-board (FOB) cargoes over a period of seven years starting immediately.

BP will lift 1.1 MTPA of LNG, equivalent to around 18 cargoes a year, or about 126 over the period.

"Following the successful start-up of Khazzan, we are pleased to announce the sanction of Ghazeer, BP's first project FID of 2018," said Yousuf Al Ojaili, President of BP Oman.

"Through the transfer of industry-leading skills and technology from BP's global portfolio, we look forward to further developing this gas field that is expected to support Oman's energy needs for many decades to come," added Al Ojaili.

Concern over meeting rising domestic demand prompted Oman LNG to announce in 2015 that it would have to divert its exported volumes from foreign markets and toward domestic consumers unless more gas was brought on stream.

Oman's three liquefaction Trains come from the amalgamation of Oman's two previously separate operating companies, Qalhat LNG and Oman LNG, now run under one banner.

The Ghazeer project is expected to come on stream in 2021 and deliver an additional 0.5 billion cubic feet per day and over 15,000 barrels per day of condensate production.

LNG price for cargoes rises by 33 percent in past year

Japanese spot LNG cargoes that arrived in Japan in March cost an average of \$10.20 per MMBtu compared with \$7.70 per MMBtu a year before, a rise of almost 33 percent and along with long-term contract deliveries will be adding to Japan's energy import costs as oil and gas prices recover.

The government said the price of spot LNG cargoes that were contracted in March was \$8.80 to arrive at a later date compared with \$6.20 per MMBtu in March 2017, a rise of 42 percent.

Japan had paid an average \$10.90 per MMBtu for shipments that arrived in February 2018 versus \$8.80 per MMBtu in the same month of 2017, an increase of 24 percent.

The price of LNG contracted in February 2018 had surged 31 percent to an average \$10.60 per MMBtu, an increase of 24.7 percent for each shipment compared with the \$8.50 per MMBtu paid in the same month of 2017.

The spot cargo numbers come from the commerce division of the Japanese Ministry of Economy, Trade and Industry and are only issued if a minimum number of two trades are recorded.

The Ministry emphasizes that "spot LNG" refers to fuel traded on a cargo-to-cargo basis and does not mean shipments under contracts on a short-term, medium-term or long-term basis. The statistical accounting of the spot prices started in March 2014.

Overall Japanese LNG imports rose 6.5 percent in February 2018, led by a surge in Australian shipments as Asian cargo numbers also rose and Middle East deliveries fell.

The nation's February LNG deliveries amounted to 8.29 million tonnes compared with 7.79MT in February 2017.

Fluxys of Belgium takes over LNG quayside fuel service in Antwerp

LNG Journal editor

Fluxys, the Belgian energy and natural gas pipeline company as well as owner of the Zeebrugge liquefied natural gas import terminal, has taken over the LNG bunkering concession in the port of Antwerp in Belgium.

The Belgian company said it would now make LNG available as an alternative fuel for ships and barges in one of the Port Authority's "key initiatives" to make the port's activities more environmentally friendly.

Permanent

"Fluxys will add a permanent LNG bunkering facility by the end of next year to complement the existing mobile (truck-to-ship) bunkering service," said the company.

Antwerp is Europe's second-largest seaport after Rotterdam and is located at the upper end of the tidal estuary of the Scheldt river, offering access to container vessels and dry-bulk cargo ships.

It will also be offering LNG to a new generation of barges being constructed for the inland river trade in Europe and in the Amster-



LNG bunkering operation from a truck at Antwerp port

dam, Rotterdam, Antwerp energy barge trading triangle.

Antwerp is connected to a network of rivers and canals, enabling barges to reach destinations outside Belgium, including the Netherlands, Germany, Austria, Switzerland and France.

"For ships and heavy-duty trucks LNG is the ideal alternative in the transition to lower greenhouse-gas emissions and better air quality," said Fluxys.

Fluxys explained that over the next 18 months it would construct at Antwerp's quay 526-528 the infrastructure needed for barges

and smaller seagoing ships to fill up with LNG at a permanent facility with LNG storage.

"For this purpose the company is working closely with G&V Energy Group, which will also build an LNG filling station for trucks on the same site," said the Belgian company.

The G&V Group is active in Belgium's fuel stations and storage market after taking over the Esso brand in the Brussels and Flanders regions.

Fluxys said that mobile LNG bunkering is now available to ships by way of quayside tanker trucks.

Elengy boosts LNG truck-loading with bays at Fos Cavaou terminal

Elengy of France, owner of three of the nation's liquefied natural gas import terminals, said it planned to build a truck-loading station at the Fos Cavaou facility near the Mediterranean port of Marseilles to boost distribution in the region.

Elengy operates the Fos Cavaou terminal and the nearby Fos Tonkin facility as well as Montoir-de-Bretagne terminal in Western France.

Montoir and Fos Tonkin currently operate LNG truck-loading bays and the new station at Fos Cavaou will improve availability of the fuel in the South.

Elengy is a subsidiary of France's

natural gas pipeline operator GRTgaz and both companies are controlled by the utility group Engie.

The truck-loading facilities at Fos Cavaou will comprise of two loading bays.

"With the one already in operation at the Fos Tonkin LNG terminal, this new station will triple the loading capacity of tankers at the Fos terminals," explained Elengy.

"Works will start this summer for a commissioning during the first quarter 2019," it added.

The Fos Cavaou project will bring additional capacity of 40 loading slots per day compared

with 16 currently available at the terminal in Fos Tonkin.

The two Fos terminals mostly handle imported LNG cargoes shipped from Algeria.

The French truck-loading market started at Fos Tonkin in 2015 and has experienced steady growth, with nearly 1,000 loadings in 2016 and 2,000 in 2017.

Elengy said the Montoir terminal on the Atlantic coast is experiencing the same level of demand and increased its capacity by 50 percent at the end of 2017 to 18 loadings per day after improving its infrastructure and schedules.



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NEWS NUDGES

US natural gas price forecast

The US benchmark Henry Hub natural gas spot price is expected to average \$2.99 per million British Thermal units in 2018 and \$3.07 per MMBtu in 2019, according to the latest short-term outlook from the US Energy Information Administration. US dry natural gas production averaged 73.6 billion cubic feet per day (Bcf/d) in 2017. "The EIA forecasts dry natural gas production will average 81.1 Bcf/d in 2018, establishing a new record," said the report. It also forecasts natural gas output will rise by 1.7 Bcf/d in 2019. "Growing US natural gas production is expected to support both growing domestic consumption and increasing natural gas exports," said the report.

Texas posts output rise

Texas, one of the main hubs of future US LNG exports from around the Gulf Coast ports such as Freeport, Corpus Christi, Port Arthur and Brownsville, saw monthly natural gas output increase 3 percent year-on-year in February to nearly 638.5 billion cubic feet, according to the Texas Petro Index report from economist Karr Ingham. "With natural gas prices in February averaging \$2.67 per 1,000 feet (Mcf), the value of Texas-produced gas increased about 40 percent to more than \$2.34 billion," said the report.

Southeast supply project moves

Williams Partners, majority owner of the largest-volume US interstate natural gas pipeline system Transco, is seeking regulatory approval for its Southeastern Trail Expansion Project to serve growing demand by 2020 in the Mid-Atlantic and Southeast regions of the nation.

LNG shipping project led by Arista plans to order 20 bulk carriers

LNG Journal editor

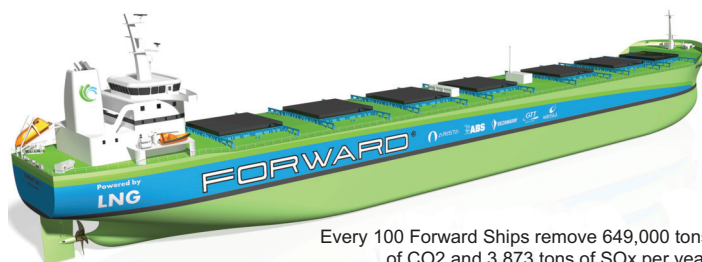
Greek shipping company Arista and its partners are planning to place an order in China for 20 bulk carriers to be powered by LNG as part of a joint development programme also involving companies such as Royal Dutch Shell and the American Bureau of Shipping.

Arista was founded in 2007 to specialize in managing the worldwide ocean transportation of dry-bulk cargoes, including commodities such as iron ore, coal, grain and alumina.

Targets

Arista, through a subsidiary called Forward Ships then started a Joint Development Project together with globally established industry leaders aiming to combat global ship emissions in the most effective manner.

Presented in 2015, the company's project identified the potential of LNG as a marine fuel and engaged in a research and development programme leading to the beginning of the process of ordering the 20 vessels.



Every 100 Forward Ships remove 649,000 tons of CO₂ and 3,873 tons of SO_x per year

Vessels like these to be built by Yangzijiang Shipyard

A letter of intent has been signed between Forward Maritime Group Inc. and Jiangsu Yangzijiang Shipbuilding group for the construction of up to 20 bulk carriers with deliveries between 2020 and 2023.

Jiangsu Shipbuilding is one of the largest private shipyards in the world and was the first Chinese shipbuilding company to be listed on the Singapore stock exchange.

The company has yards on the Yangtze River in Jiangsu Province and located about 170 kilometres from the cities of Shanghai and Nanjing.

Project Forward is a Joint Development Project (JDP) formed and led by Arista Shipping in 2013 to combat global ship emissions by promoting the adoption of lique-

fied natural gas (LNG) as a marine fuel, and by suggesting the design of a Kamsarmax-size bulk carrier.

The Arista-led plan is for the construction of Kamsarmax-size bulk carriers that would reduce the cost of transportation at sea and define the new standard of vessel for the International Maritime Organization's sulphur cap of 0.5 percent for fuel from 2020.

They are the US classification society, the American Bureau of Shipping; fuel supplier Shell Western LNG; French LNG storage technology company Gaztransport & Technigaz (GTT), Finnish propulsion company Wärtsilä and Finland-based ship design and engineering firm Deltamarin.

GasLog tells New York investors LNG shipping activity set for growth

GasLog, the US-listed and Monaco-based shipping line whose fleet numbers 27 LNG carriers, has told investors in New York that the LNG shipping market was evolving with more fragmentation, inter-basin trading and value maximization helping to increase shipping intensity.

Executives from GasLog and its US-listed affiliate GasLog Partners gave their update to investors and industry analysts in presentations in the city's Pierre Hotel.

"GasLog has expanded and upgraded its fleet of LNG carriers while delivering outstanding operational and safety performance," said Paul Wogan, GasLog Chief Executive.

"This growth has been underpinned by our strong commercial relationships and a significantly strengthened balance sheet as a result of the success of GasLog Partners as a funding vehicle for the group.

"We are pleased this delivery has been recognized through a leading total shareholder return relative to our peers over the period," stated Wogan.

The CEO said the outlook for the LNG shipping remained positive, driven by growing demand for LNG and an increase in shipping activity.

GasLog's carrier fleet has long-term charters with Royal Dutch Shell inherited by the Anglo-Dutch

company when it acquired BG Group of the UK.

"Our scale and operational and commercial capabilities position us well to benefit from an expanding and tightening market.

"We are excited by the opportunity to more than double our consolidated EBITDA over the next five years, and to unlock significant value upside from an increase in asset values, cash flows, earnings and shareholder returns," stated Wogan.

The GasLog CEO also said that the LNG market fundamentals were strong and forecast demand growth to drive supply expansion post 2020.

Australia Pacific LNG and Gladstone LNG plan gas development with Queensland permit

LNG Journal editor

Two of the three Australian coal-seam-gas-to-LNG export plants on Curtis Island near the port of Gladstone in Queensland have successfully tendered for an exploration and production licence for a key block in the Bowen Basin to boost natural gas supplies.

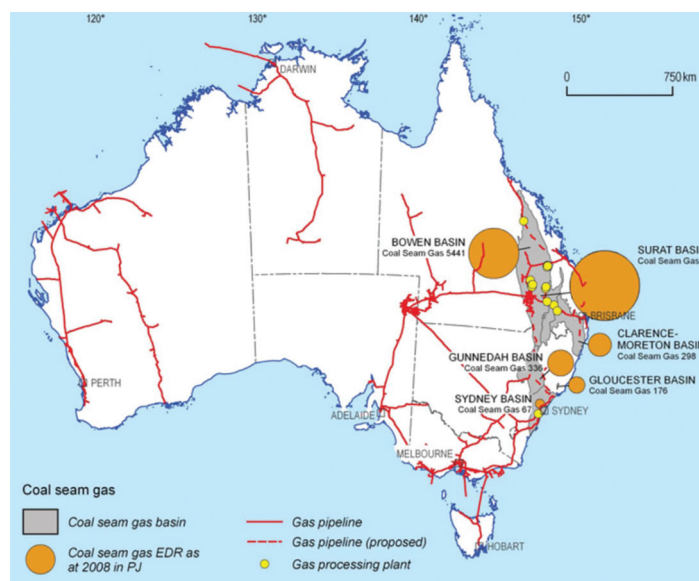
Gladstone LNG plant operator, Santos said that it had been a successful bidder along with its GLNG partners, Petronas of Malaysia, Korea Gas Corp. and Total, as well as the Australia Pacific LNG plant of ConocoPhillips and Sinopec of China.

Location

The bid was for the state of Queensland's Petroleum Retention Licence (PRL) 2016/17-1A block of 86 square kilometres, located directly west of the Arcadia gas field in the Bowen Basin.

LNG plants using onshore CSG as feed-gas require supplies from several thousand wells over the lifetime of the ventures. The plants in Queensland take substantial pipeline volumes from both the Bowen and Surat basins and their extensive CSG resources.

"Being adjacent to the planned Arcadia project means we will be able to leverage existing infrastructure, reduce development



Bowen Basin is key Australian coal-seam gas resource

costs and produce more gas," said Bill Ovenden, Santos Executive Vice President for Exploration and New Ventures.

The exploration move comes as Santos is on track to supply about 11 percent of the expected East Coast's domestic natural gas demand in 2018.

Australian regulators had raised concerns that the three CSG-to-LNG plants in Queensland had feed-gas needs that could leave the domestic market short and cause higher prices for consumers.

Over the past six months companies such as GLNG, APLNG and the third plant owned by Royal

Dutch Shell, the Queensland Curtis facility, have given assurances that the domestic market was not being neglected in terms of available gas.

"Access to new and existing supply sources in Queensland as well as new supply sources in New South Wales and the Northern Territory is critically important to enable us to continue to deliver competitive gas to the east coast domestic gas market," stated Ovenden.

"Santos has been part of the Surat and Bowen Basin communities for more than 50 years and we want to continue to invest in the

area for many years to come," he added.

For the new licence in the Bowen Basin, the APLNG plant owners will hold about a quarter of the shares and the other three quarters are divided individually among the four GLNG stakeholders.

The natural gas expansion plan comes as Santos, a stakeholder in two other Asia-Pacific LNG export ventures, has received a US\$10.4-billion takeover bid from Harbour Energy, a subsidiary of EIG Global Energy Partners, a US private equity firm.

Santos is Australia's second-biggest independent oil and gas producer after Woodside Petroleum and said that "in the interests of shareholders" it would engage in further discussions with Harbour, making its third takeover offer to Santos since August 2017.

The Australian company, based in Adelaide, counts two major Chinese companies among its shareholders with a combined 15 percent held by China's ENN Group and the equity fund, the Hony Group.

In addition to its GLNG stake, Santos owns shares in Australia's Darwin LNG plant in the Northern Territory and in the Papua New Guinea plant and its expansion project.

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MAN Diesel is supplier for first LNG bulk carrier

German marine engine maker MAN Diesel & Turbo has supplied the propulsion for the world's first LNG-fueled bulk carrier delivered in South Korea to work on the Asian nation's coastal trade.

The bulk carrier, the "Ilshin Green Iris", has been delivered from the Hyundai Mipo Dockyard in Korea to its local owner Ilshin Logistics.

The 50,000 deadweight-ton bulk carrier is powered by a single MAN B&W 6G50 electronically-controlled, gas-injection (MEGI) two-stroke engine.

The ship and its propulsion have been classed by Lloyds Register and the Korean Register and in compliance with the International Gas Fuel (IGF) Code.

The "Ilshin Green Iris" has been chartered by South Korean steelmaker, POSCO, to transport limestone cargoes in the local Korean trade.

The ship has a Type 'C' LNG fuel tank with a capacity of 500 cubic metres and comprised of a material - high-manganese austenitic steel - newly developed by POSCO that is specially designed for cryogenic LNG and liquefied gas-storage applications.

"We are very pleased to be part of this exciting project and to see our dual-fuel ME-GI engine win favour in yet another market segment," said Bjarne Foldager, Vice President of Sales for the two-stroke business at MAN Diesel & Turbo.

"We look forward to following its progress," he added.

French industrial gases firm Air Liquide expands in LNG

LNG Journal editor

Air Liquide, the France-based industrial gases company, said it was continuing to develop its latest boil-off gas reliquefaction technology onboard a second LNG carrier newbuild after successful trials on a first vessel at a shipyard in South Korea.

The French company said it had commissioned a Turbo-Brayton-1050 system for BOG reliquefaction in January onboard the Samsung Heavy Industry-built LNG carrier "GasLog Genoa".

Newbuilds

The vessel with 174,000 cubic metres capacity is being completed for Monaco-based LNG fleet operator GasLog.

Air Liquide said its Turbo-Brayton technology is a reliable and economical cryogenic system that requires no maintenance.

It is designed to re-liquefy boil-off gas from LNG carriers. The range goes from the TBF-175 to the TBF-1400, and also meets refrigeration and liquefaction needs for land applications at temperatures of between -250°C and -



Boil-off-gas reliquefaction for 'Gaslog Genoa' newbuild

70°C. "Air Liquide has demonstrated the performance capabilities of the Turbo-Brayton-1050 (TBF-1050) cryogenic unit with results that exceeded the guaranteed values," said the company.

"A second TBF-1050 unit will also be commissioned on a sister vessel being built at the same yard," added Air Liquide.

"The range also extends to equipment that is just as compact as this product but with even greater re-liquefaction capacity, like the TBF-1225 and the TBF-1400," said the company.

Air Liquide has been widening its participation in the LNG technology market. In 2017 its US business signed a contract with

Kinetrex Energy, the leading supplier of LNG in the US Midwest and a promoter of clean-fuel ventures.

The French company's Engineering & Construction unit was selected by Kinetrex to upgrade the US firm's LNG production plant in Indianapolis in the state of Indiana.

Kinetrex is a major supplier of LNG fuel to the vehicle and heavy-horsepower equipment markets.

Air Liquide has also signed an agreement with Atlantic Gulf and Pacific Co., the LNG module maker and fabrication yard operator based in the Philippines, to cooperate on developing small-scale LNG infrastructure and distribution across Asia.

US power giant GE launches big induction motor for LNG

General Electric, the US power plant and machinery company, said it had successfully completed the testing of an 80-megawatts induction motor at its factory in northeast France to serve the LNG industry liquefaction plants.

The testing took place at GE's factory in the French city of Nancy with the motor operating at a high voltage of 11 kilovolts and running from 2,500 to 4,000 rotations per minute.

GE said its latest innovation targeting LNG processing facilities will have a high motor efficiency rating of up to more than 98 percent.

The US company has been retained by several LNG plant devel-

opers in the US with plans to construct plants along the Gulf Coast with more than 25 million tonnes per annum of output.

"In the liquefied natural gas industry, reliability is the name of the game," said Ed Torres, the head of GE's Marine and Oil & Gas division, part of its Power Conversion business.

"A mid-size LNG facility could suffer costs of \$4 million a day through unplanned downtime," explained the GE executive.

"Running 99.5 percent of the time, electric motors are absolutely critical assets to LNG operations.

"I am proud to announce that our new 80-MW induction motor is

now ready to serve the LNG industry with unrivalled high power, reliability and efficiency," stated Torres.

GE said the huge item of machinery was one of the world's largest induction electric motors, leapfrogging from the 22-MW induction motor, the next highest power rating induction motor with a rotating speed up to 4,000 rpm.

The US company said that compared to its traditional 75-MW two-pole synchronous peer, the new motor has 10 times fewer rotating parts and therefore can significantly increase operational reliability, leading to 48 percent more uptime and greater availability.

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Florida Gas Transmission East-West Project approved for supplies to Gulf Coast LNG plants

LNG Journal editor

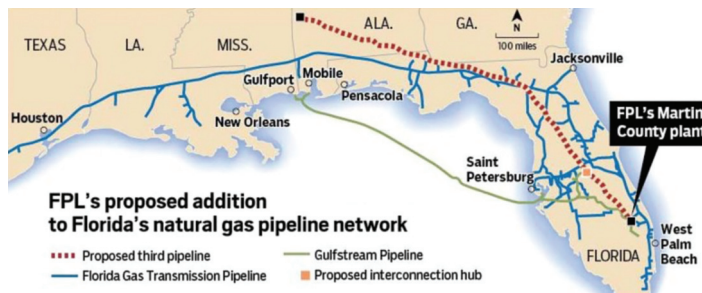
Florida Gas Transmission received a regulatory permit for its East-West Project to construct lateral connections to serve demand in the Gulf Coast, including from liquefied natural gas export plants.

Florida Gas first filed an application with the Federal Energy Regulatory Commission in October 2016 for a certificate for the East-West Project to construct around 25.2 miles of lateral and connection pipeline facilities, four new meter stations and auxiliary facilities located in Texas and Louisiana.

Shell and Jera

The East-West Project will enable Florida Gas to provide an additional 275,000 per million British thermal units per day to the project shippers, Royal Dutch Shell and Japanese energy company and utility Jera Co Inc., which have signed 10-year and 15-year agreements respectively.

Florida Gas stated that the two



Planned route of Florida Gas expansion to Gulf Coast

project shippers, Jera Energy America and Shell North America, have agreed to pay negotiated rates for their supplies and have LNG interests on the Gulf Coast. They also expect the project to be completed by around September 2018.

The Florida pipeline company stated that construction of the East-West Project should take about three months and work should begin as soon as possible to avoid disrupting natural gas services to other energy customers in Texas and Louisiana, citing one refinery in particular.

"Florida Gas's system is divided

into two service regions, the Market Area, which lies within Florida, and the Western Division, which extends from Texas to the Alabama-Florida state line," the FERC noted.

Florida Gas has said it was vital that it received a certificate for the project as soon as possible because current supplies of natural gas to the Motiva plant near Port Arthur in Texas, the largest gasoline refinery in the US, will perform pipeline integrity testing in the summer of 2018 that will require its pipelines to be removed from service and hydro-tested.

"In order to ensure that service to this strategic and vital refinery

is not interrupted, the East-West Project must be in-service by that time," said Florida Gas.

The regulator ruled that the East-West Project costing around \$69 million must be available for service within two years and comply with several environmental conditions.

In Acadiana Parish in Louisiana, the project would create the Eunice-ANR Lateral and a metering and regulating receipt point, among other connections on the Gulf Coast.

In Louisiana's Calcasieu Parish, it would create the Gillis-Trunkline receipt point and in Jefferson County, Texas, it would create the Port Arthur Lateral and Port Arthur-Motiva delivery point.

The FERC order said station piping and valves on the Florida Gas 24-inch diameter mainline in Orange County, Texas, are also included in the East-West plans to enable bi-directional flow on the mainline.

Mexico progresses with natural gas plan and including FLNG with new pipelines and storage

Mexico said that it was developing a set of privately-owned pipelines and other natural gas projects, including a floating LNG import facility, as part of a historic build-out of the nation's gas infrastructure.

The plans include Mexico's first natural gas trading hub, five interconnection compressor stations, border expansions and proposals for an underground storage facility.

Mexico's state-owned Centro Nacional de Control del Gas Natural (Cenagas), operator of Mexico's main natural gas transmission network called Sistrangas, is overseeing the programme and the energy regulator, the Comision Nacional de Energia (CRE), is providing technical guidance.

The five inter-connection projects would be linked to a planned

floating storage and regasification unit (FSRU) and also to the national pipeline network.

Two interconnection ventures are part of efforts by Cenagas and the CRE to ease natural gas shortages in the southeast, namely on the Mayakan pipeline serving consumers on the Yucatan Peninsula.

That pipeline's operator, a subsidiary of French energy company and utility Engie, is developing an interconnection with 350 million cubic feet per day to the national pipeline network.

The other project is a 390 MMcf/d link to the planned Pajaritos FSRU venture led by state energy company Petroleos Mexicanos (Pemex) at Coatzacoalcos in the state of Veracruz on the Gulf of Mexico and including imported

LNG volumes. A tender is being conducted for the charter for three to five years of an FSRU LNG vessel and the construction of a 14-kilometres pipeline connected to the national network.

"Any new capacity will be made available to the market through an open season," said Cenagas.

Three other natural gas projects would connect the system to pipelines under construction on the Gulf Coast, in the northwest and in central Mexico.

These include the Monte Grande's 500 million cubic feet per day (MMcf/d) interconnection with the Sur de Texas-Tuxpan marine pipeline in Veracruz.

Another is the Encino project, a 70 MMcf/d link with the EL Encino-La Laguna pipeline in the state

of Chihuahua, bordering the US.

A third is the Zapotlanejo interconnection with 200 MMcf/d of capacity linked to the Villa Reyes-Guadalajara pipeline in the state of Jalisco on the Pacific Coast.

The first two interconnections are expected to start up later in 2018 while the third has a completion date of October 2019.

The development efforts by Cenagas and the CRE in the southeast also include the reconfiguration of the Cempoala compressor station in Veracruz.

The project would reverse flows at the station and allow gas in central Mexico to move further south after the Tuxpan marine pipeline comes into service at the end of 2018.