

LNG Unlimited

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Gazprom to post profits and cash for risk amid LNG and pipeline volatility

Gazprom explains that the revenue forecast is based on the average price of long-term contract gas

LNG News Editor

Gazprom, the supplier of pipeline natural gas to customers from Western Europe to China as well as the Russian Federation and former Soviet states, said record gross earnings were forecast for 2021 and it was also increasing funds for managing risk in the volatile market.

The Gazprom statement said that gross earnings would amount to more than \$45 billion while 726 billion Russian roubles (\$10.22Bln) more would be set aside to manage risk in the natural gas and energy sectors.

Increase

Gazprom explained that the revenue forecast was based on the average price of gas supplies in 2021 under long-term contracts to European countries amounting to \$269.6 per thousand cubic metres.

These customer nations were defined as being non-Commonwealth of Independent States (CIS) countries.

"Compared to the original forecast, proceeds from the sale of gas will increase by almost 30 percent, which will allow Gazprom to reach a historically record level in revenue by the end of 2021," said the company.

"Thus, we are conservatively budgeting for an almost two-fold increase in Gazprom's EBITDA in 2021 compared to last year, but taking into account the dynamics of gas prices in Europe in the fourth quarter, EBITDA can be



On the water LNG faces challenge soon from subsea gas

expected to exceed \$45Bln," explained Gazprom.

Gazprom's revenues will be further boosted by doubling its export volumes to Europe via the Nord Stream II pipeline project, starting commercial operations at the end of 2021.

While competing with LNG in the European Union and China, Gazprom is only a limited player in the LNG market with around 10 million tonnes per annum of sales from the Sakhalin joint venture in the Russian Far East.

The cargoes are mostly supplied under contract to Japanese utilities.

The additional income received by Gazprom in 2021 would be distributed in three areas: an increase in dividends, an investment programme and a reduction in debt.

So for the payment of dividends in 2021, Gazprom said it had allocated 297 billion roubles (\$4.18Bln), which is 163Bln roubles (\$2.29Bln) more than originally budgeted.

The investment programme of the parent company for 2021

approved by the Board has been adjusted upwards and would amount to 1.18 trillion roubles (\$16.69Bln).

The total debt of the Gazprom Group at the end of 2021 would also decrease by \$3Bln and total \$71.6Bln.

"Thus, taking into account the fulfilment of all obligations, at the end of 2021 we expect that the net debt-EBITDA ratio (including bank deposits) will drop to the level of 1.2," said the company.

Flows to EU

The company's first-half profits to the end of June had amounted to 995.5Bln roubles (\$13.5Bln), a more than 21-fold rise on the 45.4Bln roubles (\$618.1M) posted in the same period of 2020.

Gazprom's net sales of natural gas increased in the first half to 272.3 billion cubic metres from 230.7 BCom in the same period of 2020.

First-half volume sales to Europe came to 120.6 BCom compared with 98.2 BCom in the first half of 2020.

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Steel-maker POSCO seeks LNG security with US\$600M bid for Australian feed-gas supplier

LNG News Editor

Australian coal-seam gas producer Senex Energy said it had received an A\$815 million (US\$605M) takeover proposal from POSCO International Corp., the South Korea industrial company, seeking to secure LNG imports.

The offer from POSCO International, the trading arm of the South Korean steel-making company, has already been improved several times after initial approaches.

Premium

The current POSCO offer represents a 15 percent premium over Senex's share close on October 15 and nearly 38 percent over its close at the start of September.

A POSCO statement said the company was pursuing an acquisition of Senex as part of its efforts to secure natural gas reserves for energy security.

Senex is looking to more than triple its annual output to 9.8 mil-



POSCO Energy runs LNG import terminal at Kwangyang

lion barrels of oil equivalent (1.6 billion cubic metres of natural gas) by June 2025, which will help it meet a 15-year agreement to supply the Gladstone LNG plant in Queensland, operated by Australian energy company Santos.

Among the other shareholders in Gladstone LNG is Korea Gas Corp., South Korea's state energy company and operator of four LNG import terminals.

Senex, based in Brisbane in Queensland, has been a rapidly growing gas producer supplying

Australia's East Coast market, where prices have more than doubled over the past six years following the start of three LNG export plants.

The Senex assets are centred on the onshore Surat Basin one of the main coal-seam gas (CSG) resources that supply three LNG plants and domestic gas markets.

The other two LNG plants apart from the Gladstone facility, all located on Curtis Island, are the Shell-operated Queensland Curtis LNG plant and the ConocoPhillips-

run Australia Pacific LNG facility.

POSCO International, which is listed on the Korean Stock Exchange, submitted a revised non-binding and indicative proposal to acquire 100 percent of Senex for a cash offer price of A\$4.40 per share.

This followed the submission of two prior non-binding proposals on 30 July 2021 (offer price: A\$4.00 per share) and 27 August 2021 (offer price: A\$4.20 per share).

Senex on September 15 granted POSCO a period of exclusivity to complete their due diligence enquiries and further advance the proposal.

"Following further discussions between the parties, Senex has now agreed to extend POSCO International's exclusivity period to 5 November 2021, in order to provide POSCO International with additional time to assess a further revised proposal at a price higher than A\$4.40 per share," said Senex.

Australian LNG operator Santos hails upholding of decision on Narrabri Gas for New South Wales

Santos, the Australian liquefied natural gas operator of plants in Queensland and the Northern Territory, has hailed the judicial review decision to uphold the approval of the Narrabri Gas project to supply New South Wales.

"Santos welcomes the judicial review decision of the NSW Land and Environment Court on the Narrabri Gas Project, upholding the decision of the NSW Independent Planning Commission," said Santos.

The Adelaide-based company said it looked forward to getting on its work in regional New South Wales to create jobs, drive investment and bring long-term energy security to the state at competitive prices.

Narrabri gas project is a coal-seam gas venture located near the

state border with Queensland, which exports CSG to Asia as LNG.

Santos itself is operator of the Gladstone LNG export plant in Queensland as well as being a stakeholder in Darwin LNG and in the and the Papua New Guinea plant, operated by ExxonMobil.

Santos Chief Executive Kevin Gallagher said while the legal process had pushed the timelines for the project back 12 months, Santos was committed to bringing much needed domestic natural gas to NSW, including the city of Sydney.

Gas concerns

"We are seeing play out in real time around the world what happens if you do not have domestic energy security," said Gallagher.

"On the east coast of Australia, regulators continue to warn about an increasingly tight market in the future," added Gallagher.

"A shortage of supply means only one thing and that is higher prices for NSW households and businesses. If gas was currently being imported into NSW from the international spot market via an import terminal it would cost NSW customers more than five times the cost of gas from Narrabri," stated the CEO.

The Narrabri venture is based on developing the CSG in the northwest of NSW with up to 850 wells and which Santos has always promised would be much less expensive the gas brought in from other Australian states or as imported LNG.

"It's why we have committed 100 percent of the gas from the Narrabri Project to the domestic market. Following the NSW government's 'Future of Gas Statement in July', Narrabri will be the only source of local gas for the state," explained Gallagher.

"This decision now allows us to get on with the appraisal drilling phase of the project and create jobs, drive investment and attract new businesses to the region, building a better future for the people of Narrabri," he declared.

Narrabri Gas will provide up to half of NSW's natural gas demand where more than one million family homes and 33,000 businesses rely on natural gas as a source of energy.

Tohoku signs for cargoes at start of 2022 season

Japanese utility Tohoku Electric Power has signed a contract with BP of the UK for six cargoes of liquefied natural gas for early 2022 to avoid paying too high a price on the spot market and to help keep inventories at a high level this coming winter.

The cargoes are reportedly priced at around 20 percent of North Sea Brent crude oil, which equates to about \$17 per million British thermal units at current oil prices.

LNG shortages are expected in Europe and North Asia this winter as the Atlantic Basin and Pacific Basin importers compete for spot LNG and short-term cargoes, which comprise just under a third of the market.

However, unlike in the 2020-2021 winter season LNG inventories in Japan are said to be above average after utilities were encouraged by the Government not to use up supplies for gas-fired power stations too freely before the colder weather sets in.

Japanese buyers are the largest holders of long-term contracts with the oil-linked price being at around \$10.60 per MMBtu with Brent crude at \$84 a barrel.

Tohoku, based in the east coast city of Sendai, has a book of long-term contracts, including an 18-year agreement to receive 270,000 tonnes of LNG per annum from the Sempra Energy-operated Cameron export plant at Hackberry in Louisiana.

That deal includes the provision of shipping under an agreement between the utility and Diamond Gas International, a subsidiary of Cameron project stakeholder Mitsubishi Corp. of Japan.

Japan opts for more thermal coal as LNG imports tumble 17 percent

LNG News Editor

Japanese liquefied natural gas imports plunged almost 17 percent as the nation directly replaced gas-fired power with cheaper thermal coal as LNG prices surged worldwide.

The September 2021 LNG shipments amounted to 5.41MT, or around 78 cargoes, about 12 fewer than the previous month and 16.8 percent less than the 6.5MT of cargoes received in September 2020, according to the preliminary trade figures from Japan's Ministry of Finance.

Reversal

Imports of LNG the previous month had amounted to 6.29MT, or around 90 cargoes, which was 7.8 percent higher than the 5.8MT received in August 2020.

The data shows that the Japanese directly replaced LNG as fuel for power with thermal coal where the imports jumped by over 17 percent, the same amount as LNG shipments fell.

LNG competes mainly with thermal coal for power generation



Japanese utilities storing LNG for colder winter weather

in Japan and the shipments of coal increased by 17.8 percent year-on-year in September to 9.97MT. Thermal coal imports to Japan had jumped even higher in August 2021 when they surged 34.5 percent from the prior-year period to 10.60MT.

Japan's LNG shipments in September cost 331.34 billion yen (\$2.49Bn), a rise of 67.6 percent on the 197.69Bn (\$1.48Bn) spent in September 2020, though for fewer cargoes.

LNG cargo deliveries to Japan during September 2021 from Asian nations such as Malaysia, Indonesia and Brunei and Oceania's Papua New Guinea plunged by 33 percent

to 936,000 tonnes compared with August 2020.

US cargo deliveries to Japan dropped by 22 percent to 327,000 tonnes, amounting to five cargoes.

Middle East shipments from countries like Qatar and Oman actually rose in September by 2 percent year-on-year to 965,000 tonnes.

Shipments from Russia last month were little changed from a year ago at 652,000 tonnes, down 0.1 percent.

The balance of imports and the biggest portion in September 2021 came from Australia with minor additions from African nations and the spot market.

JERA Co. sells stakes in gas-fired plants in Thai industrial estates

JERA Co. Inc., the Japanese power giant and largest importer of LNG, has sold up its stakes in two companies that operate cogeneration and gas-fired power plants at two industrial estates in the suburbs of the Thai capital Bangkok as it reorganizes its portfolio.

JERA has found a buyer for its stakes in the Lat Krabang Industrial Estate and Bangpoo Industrial Estate power facilities as they no longer fit the profile of ventures it wants to be involved in.

JERA said it had concluded an agreement to sell the stakes in the gas-fired combined cycle power generation companies to a unit of Eastern Power Group, listed on the

Stock Exchange of Thailand.

The Tokyo-based company is selling 23.80 percent of the Lat Krabang project company comprising 120-megawatts of electric power and steam generation capacity.

It is additionally selling its 19.04 percent shareholding in Bangpoo Co., the operator of a 240MW plant, also on the outskirts of the capital Bangkok.

Both of the Thai plants have been in operation since 2016. JERA said completion of the sales are expected before the end of 2021.

"JERA will continue to renew its portfolio going forward, selling assets and reinvesting the proceeds as it optimizes its asset al-

location for compatibility with a changing business environment and seeks to expand earnings," said a statement.

JERA as the largest Japanese LNG buyer has 35 million tonnes per annum of volumes and controls a fleet of 20 LNG carriers.

It also recently sold power stakes in Mexico while also setting up a new venture in the Philippines.

JERA said in September 2021 it was acquiring a 27 percent stake in Aboitiz Power Corp. for \$1.58 billion to partner with the major utility in the Philippines as the Asian nation builds out LNG and gas-fired power projects.

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NEWS BRIEFS

Kinder Morgan earnings

Kinder Morgan Inc., the US pipeline giant transporting natural gas to LNG plants and to customers around America, reported third-quarter net income of \$495 million compared with \$455M in the same three months of 2020 and with adjusted earnings of \$505M. "In our base natural gas business, we continue to benefit from growing global natural gas demand. Our assets are well positioned to serve growing domestic markets and export locations for LNG and Mexico," said KMI Chief Executive Officer Steve Kean.

Santos merger progress

Santos of Australia, the operator of the Gladstone and Darwin LNG export plants and with stakes in Papua New Guinea assets, reported record quarterly sales revenues of US\$1.14 billion versus US\$797 million in the 2020 quarter as the merger process continued with PNG-based company Oil Search. "The merger is on track for completion by year-end and is subject to a limited number of customary conditions, including Oil Search shareholder approval, regulatory approvals and Papua New Guinea court approval," said Santos.

Beach Energy positive

Beach Energy, Australia's newest LNG firm after signing a first supply deal with BP of the UK from the Waitsia Gas project in the onshore Perth Basin of Western Australia, reported a net cash position for its fiscal first quarter. "Liquidity increased to A\$643 million (US\$480) with net cash of A\$43M at 30 September 2021," said the exploration and production company.

US LNG export data shows price trends as China is top destination and India overtakes the UK in total cargoes list

LNG News Editor

The US Department of Energy has just published its latest liquefied natural gas monthly export data showing rising prices for the six plants and with China being the top monthly destination, while India overtook the UK into sixth place for overall total shipments received.

The DoE data showed 98 US cargoes were delivered in August 2021 versus 97 in the previous month and 36 shipments in August 2020.

Prices

The average price at the export points of the six US plants came to \$7.46 per MMBtu in August versus \$6.96 per MMBtu in the previous month, according to the DoE October 2021 LNG report.

The Sabine Pass plant remained the volume leader in August 2021 with five Trains on stream and supplying 32 cargoes, followed by Freeport with 23, Corpus Christi 19, Cameron 14, Cove Point seven and Elba Island three.

Shipments from the Cameron plant at Hackberry in Louisiana cost the most for August 2021 at an average \$8.07 per MMBtu versus \$7.28 in July 2021 and for the year-to-date the Cameron shipments fetched an average of \$6.86 per MMBtu from the point of export.

The average prices for each of the five other plants (from the export point) from highest to lowest in August 2021 were: Cove Point (Maryland) \$7.96 per MMBtu (\$7.20, July); Elba Island in Georgia \$7.54 per MMBtu (\$6.57 July); Freeport LNG (Texas) \$7.47 per MMBtu (\$7.23, July); Corpus Christi (Texas) \$7.45 per MMBtu (\$7.04, July); and Sabine Pass (Louisiana) \$7.07 (\$6.54, July).

Notable cargoes shipped from the facilities on the Gulf Coast included six delivered to China and two to Taiwan by Cheniere



'Maran Gas Posidonia's carried Cameron LNG to Italy

Energy's Sabine Pass plant.

The delivering vessels included the 176,300 cubic metres capacity "La Mancha Knutsen" to China and the 174,000 cubic metres capacity carrier "Dorado LNG" to the Yung-An terminal in Taiwan.

The Cameron plant send out shipments to the broadest range of destinations during the month, including China, Spain, South Korea, Japan, Kuwait, the Dominican Republic, Italy, the Netherlands and France.

A cargo for Japan was lifted by the 174,000 cubic metres capacity "Marvel Kite", the Kuwait shipment by the 154,950 cubic metres capacity vessel "GasLog Seattle" and the cargo for Italy by the 164,000 cubic metres capacity vessel "Maran Gas Posidonia".

The total number of US cargoes delivered worldwide to 40 nations since February 2016 now amounts to 2,627 shipments, or 8,502.1 billion cubic feet of natural gas.

The top five countries of destination, representing 60.3 percent of total US LNG exports in August 2021, were China (51.7 Bcf, or 15 cargoes), South Korea (50.1 Bcf, 14 cargoes), Brazil (34.2 Bcf, 13 cargoes (with split deliveries), Spain (23.1 Bcf, eight cargoes) and India (20.6 Bcf, six cargoes).

The list of the Top 10 countries of destination overall since 2016 through August 2021 showed three Asian nations, South Korea, Japan

and China filling the top three spots and India overtaking the UK into sixth place.

The Top 10 recipients of US LNG by overall numbers of cargoes at the end of August 2021 were: 1) South Korea 372 cargoes. 2) Japan 267. 3) China 201; 4) Mexico 161. 5) Spain 159. 6) India 134. 7) UK 129. 8) Brazil 155 (includes split cargoes) 9. Chile 116 and 10) France 101.

Other vessel-borne delivery price data showed that imported shipments to the US territory of Puerto Rico cost an average of \$9.13 per MMBtu in August versus \$8.81 per MMBtu in the previous month.

ISO containers

US LNG had been received in vessels by 40 different countries through August 2021, with Nicaragua now being added to the ISO containers list the previous month with a small volume delivered from Fort Lauderdale in Florida.

The US also sends regular ISO containers by cargo ship to the Caribbean nations of Barbados, the Bahamas and Haiti.

In August 2021, a total of 28 containers were delivered versus 24 in the previous month. The recipients were the Bahamas 18, Barbados four, Haiti six and Nicaragua none.

US energy report shows nations seeking oil and gas through net-zero target date as LNG expands

LNG News Editor

The US government's long-term energy forecast through to 2050 has the nation showing rapid growth in net exports over the next 10 years, as it continues to expand its liquefied natural gas infrastructure and produce natural gas at high volumes, though there is an undertone of desperation for oil and gas worldwide and calls for more exploration and production.

"Oil and natural gas production will continue to grow, mainly to support increasing energy consumption in developing Asian economies," said the 40-page International Energy Outlook published by the US Energy Information Administration (EIA).

Largest

The US report notes that the US, Russia and the Middle East region are currently the largest producers of natural gas.

In the global oil sector, the benchmark price has jumped in the high economic growth case in the report, while a consistent outcome is that Canada is one nation capable of expanding oil production to meet demand even amid the net-zero carbon-dioxide emission targets set for 2050 as well.

"All three will continue to expand production throughout the projection period, and the US will remain the largest producer worldwide, producing almost 43 trillion cubic feet (Tcf) in 2050 in the reference case," said the EIA.

"In the Reference case, Russia, the US and the Middle East will all



Meg O'Neill was formally named CEO in quarter

grow as net exporters throughout the projection period to provide natural gas to European and Asian markets," it added.

"Because it is near Europe, China, and the rest of non-OECD Asia, Russia's net natural gas exports will grow through established pipeline infrastructure, potential future pipeline additions and LNG exports," said the US report.

US LNG build-out

"The US also shows rapid growth in net exports over the next 10 years, as it continues to expand its LNG infrastructure and produce natural gas at high volumes," added the report.

"LNG plants and transportation vessels facilitate the overseas transport of natural gas between regions that are not connected by pipeline, creating an outlet for natural gas produced in the US and the Middle East to reach overseas markets where it is in the highest demand," stated the EIA.

The report noted that in addition to meeting domestic demand,

growing production in the US, Russia and the Middle East serves increasing demand for natural gas in the global market.

"US and Russian natural gas production grows by about 10 Tcf between 2020 and 2050 in the Reference case. Middle East natural gas production grows by about 5 Tcf over the same period," the report explained.

In the Reference case, global natural gas production steadily increases, growing by approximately 30 percent between 2020 and 2050.

Before that, natural gas production grew by 25 percent between 2010 and 2020, with the aid of new recovery techniques such as hydraulic fracturing and expanded infrastructure.

Projected growth in global natural gas demand and the expansion of processing and transportation infrastructure around the world drives growth in natural gas production to 2050.

Oil market

The EIA report said that output

from both the Organization of Petroleum Exporting Countries (OPEC) and non-OPEC nations would grow over the projection period, but OPEC production grows at almost three times the rate of non-OPEC production between 2020 and 2050.

"We altered the assumptions about oil supply to achieve higher and lower oil prices, as seen in the 2050 input price of North Sea Brent crude oil," said the EIA.

Brent was at \$176 per barrel by 2050 in the high oil price case, at \$95 per barrel in the reference case and \$45 per barrel in the low oil price case.

"To meet increasing demand, countries will need to rely on increased exploration (to identify additional resources), increased drilling (to harvest new and proven reserves) and technology advances (to achieve greater production yields)," stated the EIA.

Supply of petroleum and other liquids continues increasing in both OPEC and non-OPEC regions to meet growing world demand through 2050 across cases.

"Although consumption in the Reference case reaches approximately 125 million barrels per day by 2050, consumption is highest in the High Economic Growth case, where it reaches approximately 151 million barrels per day of total liquid fuels in 2050, exhibiting significant growth from current levels," said the US report.

"Canada, Iran, Iraq and Russia all have large undeveloped crude oil resources and so could expand production to help meet 2050 global demand in the high economic growth case," explained the report.

"Although Saudi Arabia and the US are also large resource holders, their resources have been more systematically developed and likely have less room to expand beyond their historical levels of production," declared the EIA.

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Chart plans carbon-capture projects for maritime sector

Chart Industries, the US manufacturer of LNG liquefaction, storage and other cryogenic equipment serving the energy and industrial gas markets, has signed an accord with Canada-headquartered Ionada to pursue carbon-capture and sequestration (CCS) projects for the maritime and power sectors.

Ionada is a developer of exhaust-gas cleaning systems that reduce emissions in shipping and power plants. The accord with Chart will bring together Ionada's technology and Chart's expertise in carbon-dioxide storage and handling systems.

Atlanta, Georgia-based Chart is also a market leader in supplying US Gulf Coast large-scale LNG export projects, including Venture Global's Plaquemines plant on the banks of the Mississippi River, Cheniere Energy's Corpus Christi expansion in Texas and Tellurian's Driftwood venture in Louisiana.

The company is also developing New York-based New Fortress Energy's FastLNG production plans, while demand for Chart's LNG vehicle tanks, fuelling stations and trailers has increased worldwide.

In moving into the CCS sector Chart and Ionada envisage making use of the US company's onboard storage capabilities via its CO2 ISO containers or in engineered built-for-purpose type-C tanks and with the CO2 then offloaded at ports.

"Once offloaded, the CO2 can either be permanently stored in geological formations or put to beneficial use in CO2-consuming industries, such as the agricultural, industrial, energy or food and beverage sectors," the companies explained.

MISC Group unit AET completes first US LNG bunkering for oil tanker off Port Canaveral

LNG News Editor

MISC Group, the Malaysian shipping company, has completed its first liquefied natural gas bunkering operation in US waters off Port Canaveral in Florida for one of the LNG-powered oil tankers owned by subsidiary AET.

MISC said that working in coordination with bunkering vessel owner Shell, the AET Aframax tanker "Pacific Ruby" was successfully re-fuelled.

Transfer

The transfer of 600 metric tons of marine LNG onto the 113,305 deadweight petroleum tanker was made from the Shell-operated "Q-LNG 4000" bunker barge and was safely and successfully completed within three hours.

"The operation was coordinated by AET and Shell NA LNG while 'Pacific Ruby' was on its way from Houston bound for Rotterdam in the Netherlands," said MISC.

"AET's Commercial and Operations Teams out of Houston both commercially and operationally managed the full process with Shell and the crew of 'Pacific Ruby' ensuring efficiency and



Shell 'Q-LNG 4000' bunkering vessel serves East Coast

safety for this first vessel bunkering in the US," said a statement.

"This bunkering milestone also represents further progress in AET's commitment to reduce the environmental impact of shipping by using lower-emission fuels worldwide," added the company.

"It also represents another example of the rapid expansion of LNG bunkering facilities in the US and globally, allowing LNG supply for transatlantic tanker routes between Europe and the US," it added.

LNG emits about 25 percent less carbon-dioxide than conventional marine fuels in providing

the same amount of propulsion power.

AET has invested in 11 LNG dual-fuel vessels, three Aframax tankers already in operations in the Atlantic Basin, one Aframax to be delivered for operations in the Pacific in the fourth quarter of 2021 and two dynamic positioning shuttle tankers (DPSTs) operating in the North Sea and the Barents Sea.

Another five dual-fuel AET Very Large Crude Carriers with LNG capability are at the newbuilding stage and are scheduled to be delivered in 2022 and 2023.

ABB and MAN combine for new LNG carrier engines for newbuilds

ABB, the Swiss-Swedish power systems company, said its turbocharging unit had won a contract to equip parts of the new propulsion systems for six liquefied natural gas carrier newbuilds ordered by four companies.

ABB Turbocharging will deliver its A200-L turbocharger brand for the engines of the vessels.

The Zurich-based company said its low-pressure, dual-fuel engine offered environmental benefits at reduced capital cost.

Its A200-L turbochargers will be used on the engines being supplied by MAN Energy Solutions, the Den-

mark-based subsidiary of the German engine-maker.

The MAN 5G70ME-C10.5-GA engines will be installed in six 174,000 cubic metres capacity LNG carriers ordered by four different shipowners, Korea Line Corp. and PAN Ocean of South Korea, Knutsen OAS of Norway and JP Morgan, the US-based bank and investment firm.

The newbuilds will be the subject of long-term charter agreements with Royal Dutch Shell.

ABB pointed out that the ME-GA is MAN's first low-pressure, dual-fuel, two-stroke engine and sits

alongside MAN's well-established high-pressure M-Type Electronically Controlled-Gas Injection (ME-GI) engines.

The ME-GA, according to ABB and MAN, offers LNG carriers and other vessels an alternative way to cut greenhouse-gas emissions and minimize air pollution.

"Turbocharger performance is particularly important for dual-fuel engines. High turbocharging efficiency ensures that a high air-fuel ratio is maintained during high-load operations," said ABB Turbocharging.



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LNG importer Turkey chooses Schlumberger and Subsea 7 to advance huge gas field in Black Sea

LNG News Editor

Turkey, one of the largest LNG importers in the European region, has awarded a European-US consortium a significant contract for the subsea development of the nation's largest-ever natural gas discovery, the Sakarya gas field in the Black Sea.

State energy company, Türkiye Petrolleri Anonim Ortaklığı (TPAO), has chosen the consortium of Houston-based Schlumberger and Europe's Subsea 7 for the engineering, procurement, construction and installation (EPCI) at the Sakarya field.

Scope

The integrated project scope will cover subsurface solutions to on-shore production, including well completions, subsea production systems (SPS), subsea umbilicals, risers, flowlines (SURF) and an early production facility.

Turkey has discovered between 400 billion cubic metres and 530 Bcm of natural gas in the Black Sea Sakarya field in assorted wells.

The project contract includes



Turkish drill ship in the Sakarya gas field in the Black Sea

the provision and installation of infield flowlines, control umbilicals, tie-in connections, associated subsea equipment, 170 kilometres (105 miles) of gas export pipeline and an monoethylene glycol injection pipeline.

The government aims to get Black Sea gas flowing into the national grid in 2023, the centennial of the founding of modern Turkey, with sustained plateau production starting in 2027 or 2028.

Turkey plans to cover up to a quarter of its consumption from the discovery by 2027.

Natural Resources Minister Fatih Dönmez has said the country may be able to start with an initial annual production capacity

of 3.5 Bcm in 2023. The eventual aim would be to lift the Sakarya field capacity to around 15 Bcm per annum within four years of initial production.

Turkey itself currently consumes between 45 Bcm and 50 Bcm of natural gas each year.

Turkish LNG import terminals in 2020 handled 10.72 million tonnes of LNG with its four largest suppliers being Algeria with 3.96MT, Qatar with 2.26MT, the US supplying 2.22MT and a further 1.32MT coming from Nigeria.

The scope of work on the Sakarya field for Subsea 7-Schlumberger comprises the whole EPCI of the subsea pipelines and associated equipment to connect the

gas wells at a depth of around 2,000 metres to the shore and gas grid. Turkey has already initiated the production of the pipes for this process.

Subsea 7 said in its statement on the contract that it defines a major contract as being one where its share of revenue is more than \$750 million.

Schlumberger will deliver the well completions scope and the design, construction and commissioning of the early production facility capable of handling up to 350 million standard cubic feet per day of gas.

OneSubsea

The SPS and SURF scope will be delivered by OneSubsea, the subsea technologies, production, and processing systems division of Schlumberger and Subsea 7.

"Subsea 7 looks forward to building a long-term relationship with Turkish Petroleum and to making a significant contribution to the development and growth of the Turkish energy industry," said John Evans, Subsea 7 Chief Executive.

Arctic LNG II developer Novatek aims to keep venture on schedule amid hints of expansion

Arctic LNG II project developer Novatek hosted a forum for contractors and suppliers, attended by more than 160 companies, to keep the venture on track for a 2024 start-up and to expand cooperation at the Novatek LNG Construction Centre at Belokamenk in the Murmansk region of northern Russia.

The forum aimed to foster experience-sharing and broader opportunities for Russian equipment manufacturers to ensure the successful implementation of Novatek's second large-scale LNG project in the Arctic after the existing Yamal plant.

All three liquefaction Trains at the Arctic LNG II plant were

scheduled to come on stream in a two-year time span from 2023.

The start of the first Train is planned for 2023, the second for 2024 and the third Train for 2025.

Representatives of 153 suppliers and contractors, nine Novatek subsidiaries and joint ventures as well as members of local and national government attended the forum.

Speakers included senior executives of Novatek and many other companies as well as the Russian Deputy Minister of Industry and Trade Mikhail Ivanov and Murmansk Region Governor Andrey Chibis.

The modules constructed in China for the first liquefaction Train for the project arrived in Septem-

ber 2021 at the Novatek-Murmansk assembly site from the Wison shipyard at Zhoushan in the eastern Chinese province of Zhejiang.

These modules were then handed over to the Arctic LNG project engineering, procurement and construction contractors comprising Technip Energies, Italy's Saipem and Russian company NIPIGAS.

"This is the forum's third edition and it is the first time that we have hosted it at the LNG Construction Centre in Belokamenka," noted Leonid Mikhelson, Novatek's Chief Executive.

"In these meetings, we discuss in detail the execution of our LNG project with Russian equipment

manufacturers, engineering companies and contractors," explained Mikhelson.

"One of our paramount tasks is to gain a significant share of the global LNG market. This can be achieved by maximizing import substitution and local content in equipment manufacturing for large-scale LNG projects, which reduces capital expenditures and makes Russian LNG more competitive," stated the CEO.

"Our joint efforts with the support by the Government will allow building up a new LNG sector of Russia's industry," he declared, hinting that other projects could be developed.