

Excelerate of US begins study on first Argentine LNG export project

Pipeline company TGS and Houston-based firm test viability of shale-gas shipments in summer
LNG Journal editor

Argentina is set to change from being an importer to an exporter of liquefied natural gas and has initiated a study on the first liquefaction and export venture with US floating project specialist Excelerate Energy.

Argentina's biggest natural gas pipeline company transporter, Transportadora de Gas del Sur (TGS), and Texas-based Excelerate have just signed a memorandum of understanding to evaluate building the country's first liquefaction plant as more shale-gas production comes on stream.

Volumes

The TGS system transports natural gas through 5,700 miles of pipelines to distribution companies, power plants and industrial customers and is now planning to send volumes to the coast for export as LNG.

Argentina previously exported pipeline gas to Chile until the supplies were halted 11 years ago to enable Argentina to meet its own requirements from its dwindling energy production.

However, the discovery in 2010 of the huge Vaca Muerta (Dead Cow) shale formation by Repsol-YPF, the Spanish-Argentine joint venture, has changed Argentina's energy fortunes.

Argentina's total reserves in the area covering four provinces amount to 308 billion cubic feet of natural gas and 27 billion barrels of oil, according to US estimates.

Excelerate and TGS will jointly collaborate on the assessment of a liquefaction project near the Argentina coastal city of Bahia



Discovery of the huge Vaca Muerta shale formation in the northwest changed Argentina's energy fortunes

Blanca, where Excelerate set up a floating import facility in 2008 when the South American nation started LNG imports.

Argentina still imports LNG volumes through two FLNG facilities, particularly during the country's peak winter consumption.

The successful development of Argentina's shale-gas reserves has resulted in a potential excess of natural gas during the summer months and exports can now be considered.

"The project aims at studying the technical and commercial viability of liquefying and exporting natural gas during the summer season, allowing a more sustainable development of shale-gas resources and reducing Argentina's annual natural gas net import needs," said Excelerate and TGS.

Natural gas accounts for about half of Argentina's electricity generation followed by a 28 percent output from hydroelectricity. Most of the remaining power generation is fueled by petroleum products or nuclear and very small amounts of coal and other renewables.

As a result of lower production and higher demand over the past decade, Argentina had turned to

natural gas imports to fill its supply gap.

"The study is expected to be completed by the end of 2018, at which time Excelerate and TGS will share the results with government and industry officials and decide on further actions towards the implementation of the Project," added the two companies.

Excelerate's Chief Commercial Officer Daniel Bustos said that given the high seasonality of Argentina's natural gas consumption, LNG has played a critical role in meeting the country's energy demands.

LNG imports are via the Escobar terminal, located on the Panara River north of Buenos Aires and the Bahía Blanca terminal, located 400 miles south of the capital.

Argentinian LNG imports have come from Trinidad, international commodities companies and most recently the US.

Bolivia is the source of most of Argentina's pipeline natural gas imports. Following the installation of a new pipeline from Bolivia in 2012, Argentina has imported slightly more than 200 billion cubic feet each year from neighbouring countries.

"This LNG export project will significantly enhance Argentina's capacity to maximize the use of local resources by allowing a more predictable development of shale-gas production while reducing the overall costs of importing LNG," added Bustos.

Prior to joining Excelerate, Bustos worked for energy company Repsol YPF in various positions in Latin America, including leading Repsol YPF's oil and gas commercial activities in Argentina, Bolivia and Brazil.

UNLIMITED AGENDA

JOINT VENTURES

Kinder Morgan awaits partner to take Pascagoula LNG plant forward

2

EXPORTS

Trinidad & Tobago stabilizes output and is boosted by Venezuela gas deal

3

LIQUEFACTION

ExxonMobil signs Alaska gas deal for LNG amid talks on Chinese finance

5

TERMINALS

RWE secures the main capacity at Germany's first import facility

6

SHIPPING



Japan's Mitsui OSK Lines in naming of LNG ship for Russia

7

ACQUISITIONS

CK Consortium of Hong Kong faces final hurdle for Australia takeover

9

Kinder Morgan awaits partner for changing Pascagoula LNG in Mississippi for exports

LNG Journal editor

Kinder Morgan, one of the main US pipeline operators and owner of two LNG facilities, said it was moving forward with modifying its Gulf LNG import facility in Mississippi to handle exports as it is already doing with its Elba Island plant near Savannah, Georgia.

Kinder said that the existing Gulf terminal at the port of Pascagoula in Mississippi could be taken forward by other parties, supported by Kinder.

CEO's view

Speaking at a conference in New York, Chief Executive Steve Kean said Kinder already supplies around 42 percent of the more than 3 billion cubic feet per day in current US liquefaction capacity.

The company has feed-gas volumes for LNG on the Tennessee Gas Pipeline, the Natural Gas Pipeline Co. of America and on the Kinder Morgan Louisiana Pipeline, as well as capacity on other lines.

With more than 10 Bcf/d of US LNG export projects awaiting final investment decisions, under construction or in service, the company said it had multiple paths to



Existing terminal at port of Pascagoula on the Gulf Coast

capture more growth. Among those projects is the Elba Liquefaction Project, which includes a total of 10 liquefaction units with liquefaction capacity of about 2.5 million tonne per annum.

"The first of the units is expected to be online later this year, with each subsequent unit then coming online 30-45 days sequentially," said Kean.

"The final unit is expected to come online by mid-year or within the third quarter of 2019," he added.

The liquefaction project at the existing Southern LNG Company facility at Elba Island is supported by a 20-year contract with Royal

Dutch Shell. "KMI is also looking to structure its proposed Gulf LNG export facility similarly to the Elba Island terminal with a long-term off-take agreement with someone who is willing to take on the risk and opportunity and lace the molecules in the international market," stated Kean.

The proposed Gulf LNG project would consist of two Trains, each with capacity of about 5 MTPA.

"There are a number of ways in which you can participate in LNG. We like the Elba model, and that's what we're looking for as a potential on our Gulf LNG facility," said Kean.

"We know how to build

pipelines. We know how to expand our pipeline network, and it creates a very good opportunity for us," he added. The Gulf LNG project had previously been paused rather than postponed for design development reasons.

The Gulf terminal at Pascagoula had originally been constructed to import LNG cargoes from Angola in southwest Africa from a production plant developed by international oil companies, including Chevron Corp.

However, the shale-gas boom made LNG imports into the US uneconomic and Kinder later decided to consider the export option.

The Gulf terminal was originally owned by US pipeline company El Paso and later acquired by Kinder.

The existing Pascagoula terminal, located next to the Bayou Casotte Navigation Channel, already includes a five-mile send-out pipeline.

It is interconnected to several downstream pipelines, including Transco, Florida Gas Transmission, the Destin Pipeline and the Gulfstream Natural Gas Pipeline from where feed-gas can be transported for processing and export from Pascagoula.

Repsol of Spain becomes fifth European customer of US Louisiana plants developer Venture Global

Spanish energy company Repsol has agreed to buy 1 million tonnes per annum of LNG under a 20-year agreement signed with the Calcasieu Pass export project in Louisiana being built by Venture Global, becoming the Washington DC-based developer's fifth European customer.

Venture Global said that Repsol would purchase the cargoes on a free on board (FOB) basis after the start of commercial operations at the facility in Cameron Parish.

The start-up of the planned 10 MTPA Calcasieu Pass plant, located at the intersection of the Calcasieu

Ship Channel and the Gulf of Mexico, is expected in 2022.

The Venture Global plant is proposed for a 1,000-acre site along with associated facilities, including the TransCameron Pipeline.

The Calcasieu LNG project has already signed several 20-year sales and purchase agreements, including with BP of the UK and Galp Energia, the Portuguese oil and gas company.

The project is already in the Federal Energy Regulatory Commission permit process and the pipeline will be 23.4 miles long and be linked-up to other intra-

state and inter-state natural gas connections.

Other facilities will include two full-containment LNG above-ground storage tanks, each with capacity of around 200,000 cubic metres.

A 720 megawatts electric generating plant would provide power and the largest LNG carriers would be received at the planned marine terminal consisting of a turning basin and ship berths.

Venture Global, owned by former investment banker Michael Sabel and lawyer Robert Pender who act as joint chief executives, is also constructing a second plant

at Plaquemines near river mile-marker 55 on the west side of the Mississippi River, 30 miles south of New Orleans.

The Mississippi River project will produce 20 MTPA of LNG and will also include small-scale liquefaction Trains, four LNG storage tanks and three marine loading berths.

Three other European companies Royal Dutch Shell, Edison SpA of Italy and Polish Oil & Gas Company (PGNiG) are among the buyers of volumes from Venture Global's projects.

Natural gas operator in Finland to lead in LNG stations

Gasum, the natural gas network operator in Finland and owner of the Skangas LNG distribution business, plans to invest in the construction of around 50 more natural gas filling stations for heavy-duty vehicles in Finland, Sweden and Norway by the beginning of the 2020s.

Gasum said the investment would multiply the size of the Nordic heavy-duty vehicle gas filling station network, enabling considerable reductions in green-house gas emission cuts.

In the Nordic countries, heavy-duty road transport already plays a key role in the logistics system.

The Finnish company said that for the emission reduction targets set at the national and international levels to be reached, concrete solutions are needed to reduce heavy-duty road transport emissions considerably from the current levels.

"Among the low-emission fuels, the most competitive alternative for this purpose is liquefied natural gas (LNG)," stated Gasum.

"Gasum's strategy is based on achieving Nordic gas market growth. Use of gas as a heavy-duty road vehicle fuel is a strategic focus for Gasum.

"In the next few years, Gasum's gas filling station network serving heavy-duty road transport will become several times larger than today.

"The 50 new filling stations will be located at key transport routes as regards road haulage, and they will enable significant increases in the use of liquefied natural gas and biogas in heavy-duty transport," stated Gasum.

"Together with new gas vehicle models, the expanding gas filling station network creates good conditions for road fuel gas market growth and emission cuts," said the company.

Trinidad stabilizes LNG output and is boosted by Venezuela gas deal

LNG Journal editor

Trinidad and Tobago, the Caribbean nation that once sent most of the LNG cargoes imported into the US before the shale gas boom and still supplies one terminal, is widening its customer base while increasing sources of feed-gas for the Atlantic LNG liquefaction and export plant at Point Fortin on Trinidad.

The government of Trinidad and Tobago has just signed an agreement with Venezuela to purchase 0.15 billion cubic feet per day (Bcf/d) of natural gas from Venezuela's offshore Dragon field, providing much needed additional feedstock for the Atlantic LNG plant.

Rebound

"LNG production from ALNG, has decreased in recent years as a result of upstream natural gas feedstock shortages," noted a report from the US Energy Information Administration.

"The maturing offshore fields that supply the project are in decline, which has led to reduced



Trinidad & Tobago plant benefits from feed-gas increases

LNG output from the ALNG facility," added the report.

ALNG project stakeholders have also identified several new domestic fields to shore up LNG production.

In 2017, BP of the UK started production from the Juniper field, which will supply 0.59 Bcf/d in feed gas and also sanctioned the development of the Angelin field for 0.6 Bcf/d and where production is expected to start in 2019.

"BP has also commissioned the Trinidad onshore compression project (0.2 Bcf/d) to increase feedstock supply to the facility," said

the EIA report. "Additional offshore fields that could provide natural gas feedstock for the project were also discovered, including BHP Billiton's LeClerc field containing 4 trillion cubic feet (Tcf) to 5 Tcf of reserves and BP's blocks near Juniper and Cashima fields containing 2 Tcf of reserves," added the report.

ALNG has four liquefaction Trains and last year exported 10.19 million tonnes of LNG, down from 10.46MT the previous year, from combined plant capacity of 2 Bcf/d.

Ophir changes strategy to focus on Asia activities after FLNG setback

Ophir Energy, the UK company based in London that was forced to suspend plans for LNG export projects in Equatorial Guinea and Tanzania, plans to move its head office to Asia and cut costs while awaiting the appointment of a new Chief Executive.

Ophir said it would consider options to unlock the potential value in its LNG assets, value that is not today "reflected in our share price despite a rapidly improving LNG landscape".

"We intend to ensure that our shareholders share appropriately in any value subsequently realised," said the company in a strategic update statement.

Ophir will additionally take fur-

ther action to change the cost structure of the business. It has also acquired some additional Asian assets from Santos of Australia for around \$220 million.

"We propose to downsize our London office, following workforce consultation, and within 12 months establish a fit for purpose Asian-based HQ to serve as the hub for our ongoing business, generating material cost savings," stated Ophir.

The company added that the search for a new CEO was still underway. "All potential candidates have strong operational, leadership and commercial skillsets. The board will expect the successful candidate to execute the above

strategic priorities," said Ophir.

"With Asia becoming the hub of our operations, it is likely that the new CEO will be based in the region," added the board statement.

Ophir posted half-year results "with an asset base capable of delivering free cash flow of \$300 million over the next three years and a strong operating capability and potentially valuable gas assets in Equatorial Guinea and Tanzania."

The UK company had been unable to meet its schedule for a final investment decision on the Fortuna floating LNG project previously planned for offshore Equatorial Guinea in West Africa.

Safety Instrumented System Migration: Protect Intellectual Property While Extending Asset Life

At today's Liquefied Natural Gas (LNG) facilities, including processing trains, terminals, and storage/transport ships, the need for safe and environmentally sound operations, is a concern and responsibility shared by operators.

Global market conditions place greater emphasis on optimizing operational performance. At the same time, it is imperative to focus on safety due to increasing government regulations and strict industry standards.

History of Technology Evolution

Honeywell introduced one of the first and most successful Safety Instrumented System (SIS) solutions with its Fail Safe Controller (FSC), helping customers reduce the risk of safety incidents, maximize production uptime, and lower the cost of regulatory compliance.

Honeywell subsequently introduced the Safety Manager system, a technology advancement designed to integrate process safety data, applications, system diagnostics and critical control strategies, and execute Safety Integrity Level (SIL)-defined safety applications in a fully redundant architecture.

By providing customers with a migration path from FSC to the Safety Manager system, customers can protect their intellectual property while extending asset life and implementing the latest process safety technology.

Seamless Path to the Future

With Honeywell's evolutionary approach to SIS upgrades, it is possible to exchange the FSC controller for the Safety Manager controller and maintain the FSC I/O and all related field devices and wiring. Hardware migration kits make the transition an easy operation.

In addition to a smooth hardware migration,

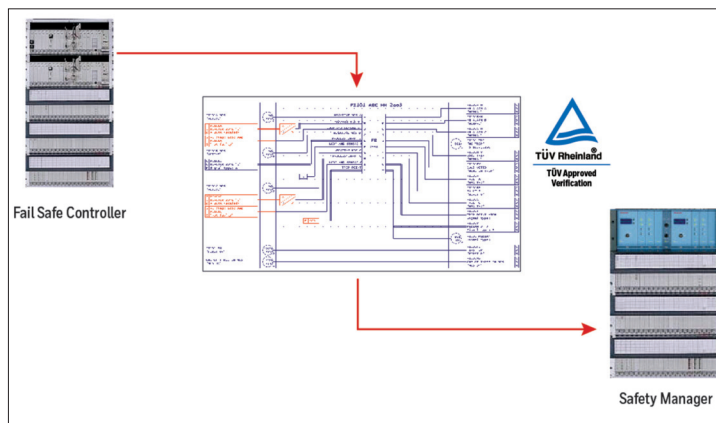
Honeywell's solution includes the option to convert the FSC application in an automated way to a Safety Manager application. A TÜV-certified software migration tool enables a one-to-one conversion of the FSC application.

The migration of an installed base of FSC systems can be planned in a phased manner, aligning it with the turn-around schedule of the plant. A SIL3 fail-safe communication link between the FSC system and Safety Manager is key to enabling incremental migration.

The Honeywell approach also includes modernization of the Universal Control Network (UCN) to Ethernet technology by introducing the Fault Tolerant Ethernet (FTE)-based Enhanced Universal Control Network (EUCN) and related Ethernet-based control devices like the Enhanced High Performance Process Manager (EHPM). Safety Manager can connect to the EUCN, thus allowing peer-to-peer communication to the EHPM. This unified control environment provides a logical path for migration of coax-based devices to Honeywell's Experion® Distributed Control System (DCS) at minimal investment cost, process disruption and changes to intellectual property. The UCN to EUCN upgrade does not require any changes in controller configuration, application software or process displays.

Benefits for LNG Operators

LNG organizations deploying the Safety



Manager system can improve safety, simplify operations and reduce costs by providing a single, robust safety system architecture across their plant enterprise.

By migrating from FSC to Safety Manager, operating companies can:

- Modernize their SIS platform by introducing the latest safety technology such as Universal Safety I/O, Universal Logic Solvers, ISA Secure cyber security and advanced DCS integration.
- Prevent a costly rip-and-replace by exchanging the FSC controller with the Safety Manager controller while maintaining existing field infrastructure.
- Extend a reliable process safety solution by easily converting the FSC application to a Safety Manager application.
- Reduce engineering, maintenance and training cost due to the similarity between legacy and new safety platforms

Leveraging Expert Support

Honeywell have a proven commitment to life-cycle support and helping industrial organizations meet their business needs for automation planning. Its high-value service and support capabilities have more worldwide reach and presence than any other supplier.

With Honeywell's approach, linearity of capital investments, together with efficiency improvements, is fully supportable using incremental modernization and upgrades. The company's local service technicians, technical consultants, TÜV certified engineers and Global Technical Assistance Center (GTAC) experts use collective expertise to support customers in countries across the globe.

*For more information, please visit
www.hwll.co/SafetyManagerSC*



NEWS NUDGES

Egyptian gas is ramped up

The Egyptian Zohr natural gas field in the East Mediterranean, which is allowing Egypt to cease LNG imports, has reached new high production levels of 2 billion cubic feet per day and higher rates are expected in 2019. "This outstanding result has been achieved only a few months after the first gas in December 2017 and one year before the schedule of the plan of development," said Italian energy company Eni, the field operator.

GTT tanks for Greeks

Gaztransport and Technigaz (GTT), the French LNG storage tank technology firm, said it received an order from Hyundai Heavy Industries of South Korea to design tanks for four new LNG carriers to be built for the Greek shipowner Capital Gas Carriers, a subsidiary of the Capital Group of Evangelos Marinakis. GTT said its Mark III Flex technology had been selected for the tanks on the four ships, each with 174,000 cubic metres of capacity. The delivery of the vessels is scheduled for between the end of 2020 and mid-2021.

Far East LNG plan

Marubeni Corp., the Japanese trading house and LNG industry participant, and shipping company Mitsui OSK Lines have signed a cooperation agreement with a jointly established body comprising the Japan Bank for International Cooperation, the Far East Investment and Export Agency and the Far East and Baikal Region Development Fund to encourage LNG trans-shipment projects.

ExxonMobil signs Alaska gas deal for LNG amid talks on Chinese finance

LNG Journal editor

ExxonMobil has signed a preliminary accord for the sale of its 13.8 trillion cubic feet of natural gas resources in the Prudhoe Bay and Point Thomson fields of Alaska's North Slope to Alaska Gasline Development Corp., the state-owned body leading the development of Alaska LNG.

The agreement follows a similar commitment of gas to the LNG project made in May 2018 by BP of the UK, also a major North Slope natural gas resource owner.

Commitments

The AGDC said the two agreements committed 22.7 Tcf to the LNG project. This comprises most of the 32 Tcf of the confirmed and easily recoverable feed-gas resource on the North Slope.

The current terms of the accord between ExxonMobil and

AGDC include price and a volume basis for a Gas Sales Agreement.

"The parties anticipate finalizing long-term gas sales agreements to purchase ExxonMobil's share of 30 Tcf of gas from Prudhoe Bay and Point Thomson," said ExxonMobil.

The US major has a 62.75 percent share in the North Slope field and 36.4 percent share of the nearby Prudhoe Bay field, the largest oil and gas field in North America.

Alaska LNG is expected to cost up to \$45 billion to build an 800-mile gas pipeline from the North Slope in northern Alaska to a planned liquefaction plant in Nikiski on the Kenai Peninsula, south of Anchorage.

A gas processing plant, needed mainly to remove carbon dioxide from the Prudhoe Bay gas, would also be built on the North Slope.

"This precedent agreement is good for Alaska and ExxonMobil to help advance the state-led gasline project," said ExxonMobil Alaska President Darlene Gates.

This development comes less than a year after President Donald Trump and China's President Xi Jinping witnessed the signing in Beijing of the five-party joint development agreement to monetize Alaska's natural gas.

"The Alaska LNG project has made meaningful progress over the past year," said AGDC President Keith Meyer.

AGDC is currently in advanced negotiations with Chinese companies, including Sinopec as a buyer, and Bank of China and China Investment Corp. as financiers for 75 percent of the expected 20 MTPA of LNG to be exported from Alaska.

Gazprom's Sakhalin LNG expansion is one of industry's stalled projects

Gazprom, the Russian pipeline natural gas supplier to Europe and owner of the Sakhalin Island LNG export plant, has proved itself to be slow moving in expanding Sakhalin with an additional liquefaction Train to take nameplate capacity to around 14.4 million tonnes per annum amid Asian demand.

The Sakhalin plant was developed by Royal Dutch Shell and Japanese trading houses, Mitsui & Co and Mitsubishi Corp., and Gazprom snatched majority control in 2007 amid Russian environmental permit delays.

The plant eventually came on stream in 2009. Sakhalin is smooth-running with its two Trains and exports most of its shipments to Japan utilities and South Korea.

Gazprom now holds just over 50 percent of the plant while Mitsui has 12.5 percent and Mitsubishi 10 percent, with the balance held by Shell.

Since Gazprom began talking



Sakhalin's two Trains have been on stream since 2009

about an expansion in 2014 by building one new Train, Russian natural gas rival Novatek has built the whole Yamal LNG plant in Siberia, which will become the largest in Russia when the third Train enters commercial service.

The Sakhalin LNG expansion is still at the front-end engineering stage and a final investment decision has yet to be taken.

"Therefore many aspects of the project are highly uncertain," said analysts. "The current proposal is for the liquefaction facility to be a one-Train project but the project may be expanded further if feed-

gas is available," they added.

"Additional infrastructure required for the project includes two full containment LNG tanks each with a capacity of 160,000 to 200,000 cubic metres and additional gas processing," stated the analysts.

The Sakhalin expansion was on the agenda when Alexey Miller, Gazprom Chairman, met Hidenori Takaoka, Chief Executive of the Energy Business Group at Mitsubishi, this week at the Russian-organized 4th Eastern Economic Forum in Vladivostok.

First German LNG import terminal boosted by RWE Trading taking most of regas capacity

LNG Journal editor

RWE, one of Europe's leading energy companies and utilities based in the German city of Essen, said it had secured "a considerable part" of the capacity from Germany's first LNG terminal planned for Brunsbuettel on the Elbe River near the port of Hamburg.

RWE said its contract follows a successful "open season" in which market interest was tested for the facility planning to import around 4 million tonnes per annum of LNG.

Backers

Dutch Gate LNG terminal owners, the utility Gasunie and global storage company Vopak, plan to develop the Brunsbuettel facility.

Vopak and Gasunie are teaming up with German company Oiltanking GmbH for the LNG project and had already gained the European Commission's approval under merger regulations to establish a joint venture.

The three companies are planning to construct an onshore multi-service LNG terminal, including imports and additional services such as truck-loading and



Brunsbuettel terminal will be near existing energy plants

bunkering. "LNG will play an important role in the North-West European gas market and therefore we are very pleased to take this step forward towards an LNG terminal in Germany," said Andree Stracke, Chief Commercial Officer of Gas Supply at RWE Supply & Trading.

"We believe that together with the German LNG Terminal we can fully develop a significant business around the terminal, delivering LNG and gas to our customers in Germany and throughout Europe," added Stracke.

"LNG remains a key growth area for RWE. This agreement will enable us to continue growing our

portfolio and provide us with additional flexibility to take advantage of new opportunities as they present themselves in the global LNG market," explained Stracke.

If approved, construction could start in 2020, and the terminal could be fully operational by the end of 2022.

The feasibility study for Brunsbuettel had consisted of economic, technical, nautical and regulatory assessments as well as the permits procedures.

Germany is the only major European Union nation without LNG import facilities, though it is advancing some LNG fuel and bunkering services in Baltic ports

such as Rostock and on the European river networks for barge traffic.

Building an LNG terminal at Brunsbuettel would put it near a nuclear power plant set for closure in 2022.

The Brunsbuettel plant is in the German state of Schleswig-Holstein on the banks of the Lower Elbe and three kilometres east of the port town of the same name.

Germany's transition to the cleaner fuel era, outside of nuclear plants, has not so far depended on LNG, but on Russian pipeline natural gas.

The volumes of German gas received from Russia amount to more than 53 billion cubic metres per annum.

This is the equivalent of 39 million tonnes of LNG while the Brunsbuettel import terminal would have initial capacity of around 4 million tonnes.

Up until now Europe's largest economy has been forging closer pipeline ties with Gazprom as the Russian natural gas giant also acquires more German gas assets.

The whole LNG Market at your fingertips

- Increased market visibility through a quick "lowdown of the market" on Monday morning and detailed "bird's eye" view of the past month
- Break-down and illustration of complex LNG trade relations backed by real data to increase feel for the market
- Access to pre-digested primary market data
- Consistent & systematic market perspectives
- Market and fleet overview in one convenient package

www.lngunlimited.com

LNG Unlimited



Sojitz of Japan and Reganosa of Spain plan gas ventures

Japanese conglomerate Sojitz Corp. plans to expand international LNG activities with Spanish company Reganosa, owner of the Mugardos import terminal in northwest Spain.

The Spanish company's name, Regasificadora del Noroeste (Reganosa), stands for northwest regasification. Sojitz is already a shareholder in the Mugardos terminal company.

Sojitz energy and infrastructure executive Masakazu Hashimoto and Emilio Bruquetas, Chief Executive of Reganosa have signed a memorandum of understanding (MoU) on their proposals.

Reganosa Holding has a 75 percent stake in the terminal assets while Sojitz owns 15 percent and Algerian energy company Sonatrach has a 10 percent share.

In addition to owning the Mugardos terminal, Reganosa is certified as a Transmission System Operator at European level, operates a natural gas pipeline network and also manages the first regasification facility opened last year in the Mediterranean nation of Malta.

"The agreement will promote the search for areas of collaboration and the development of opportunities that are identified, both in the fields of gas infrastructure and renewable fuels as well as gas-to-power projects and smart grids," said a statement.

"The geographical area that the joint effort will cover will be across Asia, Europe, the Middle East, and Latin-America," it added.

"Both parties have great hopes for the alliance, as it combines the strength of a powerful global corporation with the knowledge and readiness to design made-to-measure solutions in the gas sector," explained the two companies.

Japan's Mitsui OSK Lines names ice-breaker LNG carrier for Yamal

LNG Journal editor

Mitsui OSK Lines, the Japanese shipping company and LNG fleet owner, has held a naming ceremony in South Korea for an ice-breaking LNG carrier to deliver shipments to Asia from the Russian Yamal LNG export plant in Siberia.

The 172,000 cubic metres capacity vessel "Vladimir Vize" was jointly ordered by MOL and China COSCO Shipping Corp. and constructed at Daewoo Shipbuilding & Marine Engineering in South Korea.

Another 'Vladimir'

The name "Vladimir Vize" was chosen in honour of the Russian Arctic explorer and oceanologist.

The "Vladimir Vize" is the sister vessel of the "Vladimir Rusanov", which started transport service at the end of March 2018 under a long-term charter contract with Yamal LNG, whose owners are Russia's Novatek, French energy major Total, China National Petroleum Corp. and the Chinese Silk Road equity fund.

MOL was scheduled to put the



Korea-built 'Vladimir Vize' to ship Russian LNG to Asia

new carrier into service by the end of September.

The "Vladimir Vize" will be able to deliver cargoes from the Yamal LNG port at Sabetta via the Northern Sea Route to Asia without ice-breaker support.

"Construction of the last of the three newbuilding ice-breaking LNG vessels ordered by MOL has been progressing as planned in DSME, and the vessel is expected to be delivered to the Yamal LNG Project in the next year," said the Japanese company.

"Furthermore, regarding the

four conventional LNG carriers destined for the Yamal LNG project announced in June 2017, construction to a high safety standard is proceeding with our project partner, China COSCO Shipping, using both internal and external supervisors," added MOL.

The four vessels are expected to be completed in 2019-2020.

"The second Train at the Yamal LNG plant started its operation in August 2018 and LNG production from the plant has been expanding steadily," said MOL.

Japan's spot LNG prices rise by around 7 percent in month

The average price of spot LNG contracted in August 2018 for shipment to Japan was given by the government as \$10.70 per million British thermal units, an increase of 7 percent on the previous month and more than 84 percent higher than the contracted price in August 2017.

Japanese spot LNG had cost \$10.00 per MMBtu on a contracted basis in July 2018 and \$5.80 per MMBtu in August 2017, illustrating the effects of the jump in the price of oil.

The average price of spot cargoes that actually arrived in Japan in August 2018 was \$9.80 per MMBtu versus \$5.60 per MMBtu in August 2017 and \$10.30 in July 2018, according to the govern-

ment data. Japanese spot LNG prices have been driven higher by more competition for shipments in North Asia, particularly from China.

The North Sea Brent crude oil price that influences Japanese long-term contract prices also impacts spot LNG and other energy markets and has been at around \$77 per barrel in September, though slightly lower in August.

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 import prices rose by 16.7 percent last month compared with the year-ago period and more shipments from the Middle East offset lower Asian cargo volumes while US LNG cargo volumes are catching up with those from Russia.

LNG shipments were little changed at 6.813 million tonnes in July versus 6.817MT in the same month of 2017, down 0.01 percent, according to the preliminary trade figures from the Japanese Finance Ministry



Ensure Safety, Simplify Operations and Reduce Lifecycle Costs



Safety Manager SC – Simplifying Plant Safety

With the new Series-C design this platform is capable of LEAP™ project execution, offline simulation capability, and seamless integration with Experion. It can be easily configured to meet SIL2 and SIL3 applications across the plant ranging from small packaged systems to large distributed architectures and is ISASecure Level 2 certified.

CK Consortium of Hong Kong faces final hurdle to acquire Australian natural gas pipelines and storage

LNG Journal editor

Australian regulators said they would not oppose the A\$13 billion (US\$9.8 billion) acquisition of natural gas pipeline company APA Group by the CK Consortium of Hong Kong after the Chinese company agreed to sell-off some assets in Western Australia.

APA controls key connections across the country, including to LNG export plants.

Competition

The Australian Competition and Consumer Commission (ACCC) granted its approval to the deal after the CK Group addressed competition concerns by pledging to sell-off all APA's pipeline assets in Western Australia.

APA first received the unsolicited proposal in June 2018 from the consortium led by CK Infrastructure Holdings, CK Asset Holdings Limited and Power Assets Holdings.



Chinese company will offload Western Australian pipelines

CK Infrastructure is the global group created by Hong Kong-based Chinese billionaire Li Ka-shing, who has now retired and left his son, Victor Li, in charge.

Among the pipelines APA owns is the link to the Royal Dutch Shell-operated Queensland Curtis LNG export plant from the coal-seam gas fields in central Queensland to the liquefaction plant on Curtis Island near Gladstone.

The approved deal will make

CK Group, led by CK Infrastructure Holdings, the biggest pipeline player on the nation's East Coast.

However, one more hurdle remains, the clearance from the federal government's Foreign Investment Review Board.

The ACCC had expressed its concern the acquisition would give CK Group a monopoly grip on most gas transmission and storage facilities in Western Australia.

ACCC Chairman Rod Sims said

the Chinese group had undertaken to divest its WA acquisitions to address anti-competition concerns.

The original deal would have given the CK Consortium ownership of most gas transmission and storage facilities in the West.

"The undertaking addresses these concerns and creates an opportunity for a new operator to acquire a valuable set of assets, together with the personnel needed to operate and manage the assets," Sims said.

The assets to be sold by the CK Consortium after a completed takeover transaction, include the Parmelia Gas Pipeline, the Goldfields Gas Pipeline, the Kalgoorlie to Kambalda Pipeline and the Mondarra gas storage facility.

"Concerns raised by industry participants mostly related to APA's pre-existing dominance in gas transmission. However, this acquisition does not alter that situation in a material way," stated Sims.

Inpex expects future Indonesian Abadi LNG project to be smoother sailing than Australia's Ichthys

Inpex, the Japanese energy company with majority stakes in the Ichthys LNG project in Australia's Northern Territory and with an on-shore plant proposed for Indonesia, is expecting LNG to transform its earnings and for the new liquefaction venture to have a smoother path to completion.

The company's Ichthys LNG project began commercial operations in early August at its liquefaction and export plant at Bladin point, near Darwin. It has a nameplate capacity of 8.9 million tonnes per annum with prospects for expansion.

"Inpex acquired a stake in the Ichthys gas field in 1998, but took 20 years to start actual production - two years behind schedule," said Hitoshi Okawa, an Inpex executive based in Australia.

"It's like a miracle to have finally come to this point," said Okawa in reference to the venture that suffered cost overruns and was 18 months behind schedule.

The project's final cost is expected to be more than US\$40 billion, according to Total. This far exceeds a 2012 cost estimate of US\$34Bln.

However, most recent Australian LNG projects have suffered cost overruns.

Chevron's 15.6 MTPA Gorgon LNG project saw its costs soar from US\$37Bln to US\$54Bln as its completion date also slipped from 2014 to 2016.

The Santos-operated Gladstone LNG plant in Queensland had an original price tag of US\$16Bln and final costs rose to US\$18.5Bln.

Inpex said it expected to achieve

high returns from its investment, pushing the company's net profits to an estimated 150 billion yen (US\$1.3Bln) by fiscal 2022, an almost four-fold increase from 2017.

Companies such as Ichthys LNG partner Total and Inpex's Indonesian Abadi LNG project partner Royal Dutch Shell, now have around 50 percent of their income from LNG.

This contrasts to less than 30 percent for Inpex, whose reliance on oil has increased over the past 10 years to 76 percent of sales in 2017, up from 60 percent in 2008.

Inpex hopes to repeat its success with Ichthys to expand further into the LNG sector and is now moving ahead with the Abadi LNG project in eastern Indonesia.

When completed, the Abadi project is expected to produce 9.5 MTPA of LNG, raising Inpex's global

output capacity to about 13 MTPA on stake ownership.

"Inpex is using knowledge gleaned from the Ichthys project to help ensure success with Abadi. Thus far, about 4,000 items have been stored in a database to help contractors and others involved in the Indonesian project," said Inpex's Okawa.

"I want to make it a search platform for everything concerning LNG development," he added.

Inpex holds 62 percent of the shares in Ichthys LNG with French energy major Total the second-largest stakeholder with 30 percent, while smaller shares are held by CPC Corp. of Taiwan and the Japanese utilities, Tokyo Gas, Osaka Gas, Kansai Electric Power, Jera Co. Inc. and Toho Gas.

Powering the Energy Future through LNG



Where no natural gas pipeline exists Chart offers complete solutions for LNG as a primary fuel for power generation, or as a secondary fuel where natural gas pipeline capacity is constrained.

- Diesel, propane, LPG and oil displacement
- Remote locations and islands
- Peak shaving
- Emergency back-up and curtailment
- Temporary power generation

Email: LNG@ChartIndustries.com

www.ChartLNG.com



Innovation. Experience. Performance.®