



UK offers state loans to energy firms to avoid winter gas crisis

Fast-rising gas prices at the UK National Balancing Point (NBP) are causing a wave of bankruptcies. Bulb, Britain's sixth largest energy company, is seeking a bailout and the Government promised to intervene by offering state-backed loans to surviving energy companies to ensure stable gas supplies to end-customers this winter.

Speaking in Parliament on Tuesday, energy business secretary Kwasi Karteng sought to reassure industry and consumers that the Government would intervene to avoid cuts in gas supply during the winter, and stressed the country is currently not at risk of running into a "real gas shortage."

"There is absolutely no question that the light will go out and the people will be unable to heat their homes," he said. "Such thinking is alarmist, unhelpful and completely misguided."

In an emergency move, the Government is considering offering emergency state-backed loans to surviving energy companies to encourage them to take on customers from firms that go bust.

No supply emergencies expected

Though the UK, like other countries in Europe, has been affected by global rising gas prices, Britain benefits of having a diverse range of gas supply sources. "We have sufficient capacity, and more than sufficient capacity, to meet demand and we do not expect for supply emergencies to occur this winter," the UK energy secretary said.



Kwasi Karteng speaking in the House of Commons

Explaining the reasons for the price surge in Europe, he cited the fast economic rebound post Covid-19, high demand for LNG shipments in Asia as well as reduced supply from the US due to adverse weather events, which means much less LNG is reaching Europe. Increased demand, coupled with reduced variety of supply globally, has put upward pressure on the global gas prices. High wholesale gas prices have driven up wholesale power prices, with a number of short-term markets trading at or near record levels.

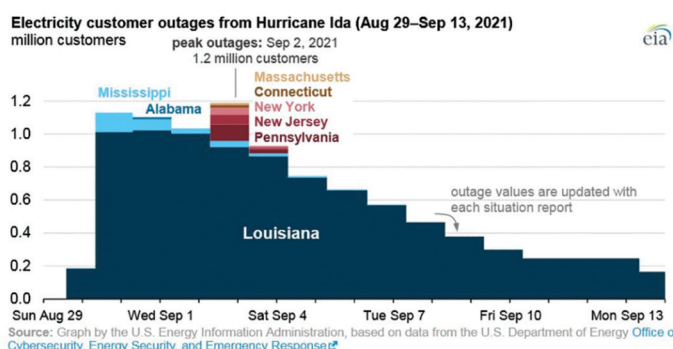
"But we are not complacent and we do not expect supply emergencies this winter," Karteng said, underlining "this is not question of security of supply."

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Entergy still works to restore power in Louisiana, worst hit by Hurricane

Quantifying the impact of Hurricane Ida, the US Department of Energy (DoE) said the storm initially left more than 1.2 million in the dark in Louisiana, Mississippi, and Alabama. Entergy still hasn't restored power to all customers. By its estimates, full electricity supply may not be restored in certain southeastern Louisiana parishes until the end of September.

Classified as a Category 4 storm, Hurricane Ida made landfall on the afternoon of Sunday, August 29, near Port Fourchon, Louisiana. Figures from the DoE's Office of Cybersecurity, Energy Security, and Emergency Response (CESER) show the at least 232,000 customers lost electricity service in five northeastern states on that day. Power supply was interrupted in Pennsylvania, New Jersey, New York, Connecticut, and Massachusetts as Hurricane Ida crossed over these northern states, although most of those cus-



tomers had power restored within 24 hours.

Service to customers in Mississippi was almost entirely restored by Tuesday, September 7 and by the morning of September 13, power had been

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European gas prices reach record levels

Traded natural gas prices at Europe's main hubs, the British NBP and the Dutch TTF, have reached record levels. The UK NBP price for the end of the summer season has risen more than four-fold in six months to the equivalent of \$25.95 per million British thermal units (MMBtu) on September 21, while TTF prices soared to the equivalent of \$25.80 per MMBtu the same day.

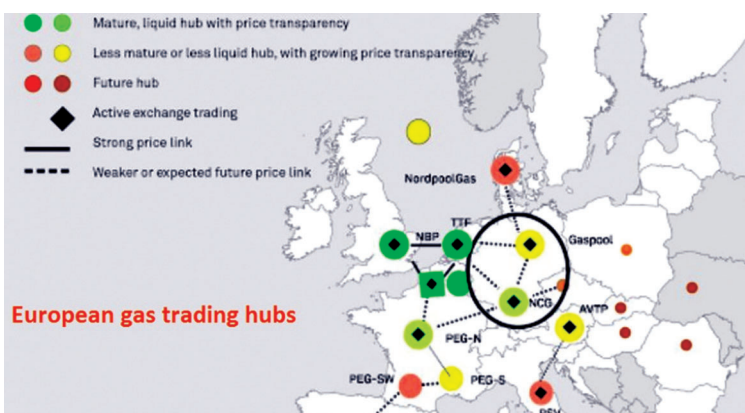
The NBP had been trading as low as \$6.00 per MMBtu towards the end of the winter season on March 21, while the TTF was at \$6.00 per MMBtu base six months ago.

The picture was the same in other parts of the Continent. For Southern Europe, the Italian Punto di Scambio Virtuale (PSV) price

was at the equivalent of \$21.69 per MMBtu. The NetConnect Germany (NCG) and the German Gaspool market prices averaged the equivalent of \$23.35 per MMBtu on September 21.

The steady rise in prices has been unable to re-direct spot LNG cargoes to European shores as the North Asian spot price, the Japan-Korea Marker, has always stayed one step ahead in the past two months.

The current Japan-Korea Marker price for spot deliveries to Asia was last at around \$29.20 per MMBtu, even higher than the elevated European prices. ■



US gas consumption to fall through 2022 on lower power sector demand

Lower gas-burn in the US power generation sector will drive down overall gas consumption this year and next. Though total gas use across all end-use sectors is set to rise slightly in 2022 from an average 82.5 billion cubic feet per day (Bcf/d) this year – it is still 0.7 Bcf/d less than in 2020, EIA figures show.

Rising industrial gas consumption is partially offsetting the declining consumption in the electric power sector, analysts at US Energy Information Administration (EIA) explained. Gas-burn in the US power sector largely hinges on the prices of competing fuels, notably thermal coal. Utilities optimise the dis-

patch of their generating assets by switching between coal- and gas-fired power plants.

During the first half of 2021, higher prices at Henry Hub resulted in a lower gas use in the power sector than in the first half of 2020, and EIA analysts expect the Henry Hub price to average \$3.63 per million British thermal units (MMBtu) in 2021, or \$1.60/MMBtu more than last year's average.

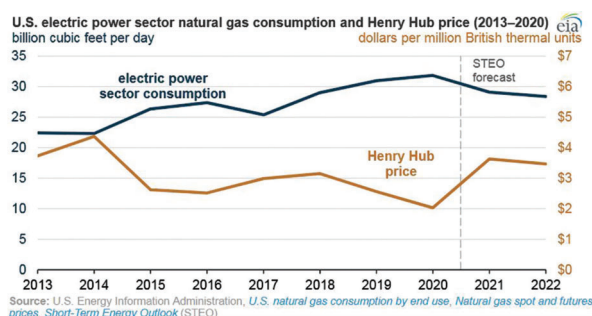
"We therefore expect 2.7 Bcf/d, or 8.3%, less gas consumption in the US power sector in 2021, [...] and another small, 0.7 Bcf/d, decline in gas-burn in 2022 given that Henry Hub forward prices remain elevated at

\$3.47/MMBtu and as natural gas faces more competition from renewable energy sources," EIA analyst Corina Ricker said.

Industrial demand rises as US economy rebounds

Looking at the industrial sector, gas use is seen rise to 23.8 Bcf/d in 2022, up from an average 23.2 Bcf/d this year. Industrial gas consumption largely depends on the growth of the manufacturing sector, which the EIA measures using a natural gas-weighted industrial consumption index.

"We expect that the index will increase 5.8% in 2021 from 2020 levels and another 5.8% in 2022 from 2021 levels, reflecting continuing post-pandemic economic growth," Ricker concluded. ■



Source: U.S. Energy Information Administration, U.S. natural gas consumption by end use, Natural gas spot and futures prices, Short-Term Energy Outlook (STEO)

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restored to 85% of Louisiana customers, according to CESER estimates.

Parts of Louisiana still without power

Entergy, delivering electricity to 2.9 million utility customers in Arkansas, Louisiana, Mississippi and Texas, estimated that Hurricane Ida damaged 30,000 utility poles, which is nearly as many as the combined effects of Hurricane Katrina in 2005 (17,000 poles) and Hurricane Laura in 2020.

Even today, Entergy is still working to restore power supply parish by parish. By its

estimates, full electricity supply may not be restored to certain southeastern Louisiana parishes until near the end of September.

Electric utilities tend to report loss of service to customers to the DoE without necessarily identifying whether those customers are residential, commercial, industrial, or some other customer type. In the United States, the DoE counts some 158 million electricity customers across all sectors as of June 2021, and 2.5 million of these customers were in Louisiana. Within Louisiana, about 1.3 million customers are served by either Entergy Louisiana or Entergy New Orleans. ■

Japan's JERA and Mitsui divest their Mexican power assets to UK fund

Japan's largest utility JERA, along with Mitsui and partners, has agreed to sell its entire stakes in the Mexican power plant operator MT Falcon Holdings to the British investment fund Actis GP LLC for an undisclosed amount. JERA owned 20% in MT Falcon Holdings which operated five combined cycle power plants, run as IPPs.

The five Independent Power Projects (IPPs) with a combined capacity of 2,233 MW, include the Saltillo CCGT which was brought into commercial operation in 2001, Altamira II (start-up: 2002) Rio Bravo II (start-up: 2002), Rio Bravo III: II (start-up: 2004), Rio Bravo IV: (start-up: 2005).

All five IPPs were divested to Actis GP, and the sale is expected to be completed by March 2022. Headquartered in London, Actis GP was founded in 2004 and acts as global investor in sustainable infrastructure with a focus on power plants, digital infrastructure including electricity networks and real estate.

As one of the world's largest LNG portfolio players, JERA has been acquiring gas-fired power generation assets in various countries around the globe. However, tight gas supply and rising spot LNG prices have rendered some older gas-fired power plants commercially unattractive in some locations.

Mexico's gas demand rebounds since August

Natural gas consumption in Mexico had been recovering since August after having slumped to 7.5 billion cubic feet per day

(Bcf/d) in May 2020 following Covid-related lockdowns. However, most of this demand is covered by pipeline gas from the United States, which costs less than LNG shipments.

Figures by the US Energy Administration (EIA) show that rising volumes of US pipeline gas are more than offsetting the fall in LNG deliveries to Mexico and declining domestic gas production. Mexico has in fact

evolved as the largest destination for US gas exports since 2015, and the recently completed Wahalajara pipelines has boosted US pipeline gas flows.

Industry and power generators account for 54% and 46% of Mexico's gas consumption, and most of the country's electricity, around 61%, is also generated from natural gas, followed by fuel oil, coal and renewables. ■



View of Rio Bravo power units II-IV

AES takes full ownership in 381 MW LNG-fuelled power station in Panama

Virginia-based AES has acquired the remaining half of its LNG-fuelled power station in Panama from Inversiones Bahia. The purchase of a 49.9% stake in AES Colón gives the American multi-national utility full control over the 381 MW combined-cycle gas power unit and the adjacent LNG regas terminal with 180,000 cbm storage at the Atlantic seaport town.

Juan Ignacio Rubiolo, President for AES' Mexico, Central America and the Caribbean Strategic Business Unit said the transaction "reaffirms AES' commitment to Panama and represents a

new milestone in the execution of our regional LNG strategy to deliver cleaner, reliable and efficient energy to our clients."

The purchase of AES Colón will help the globally active gas and power company to maximise its LNG in Panama and wider Central America. Owning more LNG-fuelled power assets in Central America "opens up important synergies and flexibility across our portfolio," Rubiolo explained.

The 381 MW combined-cycle power plant and adjacent LNG regas terminal at Colón, a seaport near the Atlantic entrance to the Panama Canal, was built by AES in 2018. One

year earlier, AES and ENGIE of France set up a joint venture to sell liquefied natural gas to the Colón regas terminal. Operations of the Colón CCGT also started that year.

Headquartered in Arlington, Virginia, AES is one of the world's leading power companies, generating and distributing electric power in 15 countries and employing 10,500 people worldwide. In the Dominican Republic, AES has set up a joint venture with the local utility Energia Natural Dominicana on similar integrated LNG import and power generation projects. EPC firm McDermott International has been contracted to lead construction works for AES' LNG import terminal in Dominican port town of Duarte. ■



Render of AES Colón CCGT by its former owner, Inversiones Bahia

Ansaldo Energia to help ATLA digitalise design of gas turbines hot parts

Ansaldo Energia has joined the European Union's 'Digital Volunteer Program', aimed at bridging the digital skills gap in small and medium-sized industries. As part of this project, Ansaldo is mentoring the Italian manufacturer ATLA to develop a new digital procedure for inspecting hot gas components from turbines and related equipment.

ATLA is an Italian company specialized in the production and repair of high-tech gas turbine components for aerospace, defense, and industrial applications. The digitalisation project, carried out under Ansaldo's leadership, will help ATLA assess the hardware status of hot gas components.

All key data will be collected and configured into a digital twin with a view to improving the design of components, and extending their operational life-time. "The digitalization of processes and companies is

– in this historical moment – a crucial element of innovation and represents the key to achieve the ambitious ecological and energy transition goals indicated by the European Union" said Daniela Gentile, Vice President Innovation and Quality of Ansaldo Energia.

However, it is necessary that the digital transformation is widespread throughout the manufacturing industry, from large to small-medium companies, which is why Ansaldo Energia joined the EU's 'Digital Volunteers Pilot Program'. "Digital transition is



a fundamental asset for the growth of SMEs and for the whole supply chain: it is impossible to imagine a sustainable growth (...) economy without it," he said.

Since April 2021, the EU program aims to set up network of large companies that are ready to support the digitalization of SMEs on a 'pro-bono basis' and through their internal skills. Each mentor is hereby assisting a small company to and support its digital transformation processes. ■

MAN installs world's first ETES for Danish utility company DIN Forsyning

In Denmark, MAN Energy Solutions is forging ahead with installing the world's first ETES (Electro-Thermal Energy Storage) heat-pump for multi-utility company, DIN Forsyning. Once completed, the power plant will supply climate-neutral district heating to 25,000 households in Esbjerg.

Dr Uwe Lauber, CEO of MAN Energy Solutions has just visited Esbjerg to meet project partners and get a concrete idea of the progress on-site. Commenting on importance of the technology for MAN's wider business, he said: "This project demonstrates how energy harvested from the increasingly-important renewable sector can be harnessed outside of the power grid, and how essential sector-coupling will be to a decarbonised energy-future."

The project was first announced in February 2021 when DIN Forsyning commissioned MAN Energy Solutions to supply a turnkey solution for heat-generation, based

on two MAN ETES heat-pump systems.

DIN Forsyning, owned by the municipality of Esbjerg and Varde, and supplies approximately 1 million MWh of district heating per annum mostly to household customers in and around Esbjerg, a Danish seaport town on the west coast of Jutland. With an overall heating capacity of 50 MW, the coming district-heating plant will supply around 100,000 local inhabitants with approximately 235,000 MWh of heat annually.

Harvesting wind and tidal energy

Thanks to its favourable location at the Port of Esbjerg, the new district-heating can make use of renewable energy from nearby wind farms and seawater. The plant will thus form an emission-free alternative to the city's current, coal-fired power plant, which at present provides approximately half of Esbjerg's district heating and is scheduled for closure by April 2023.

Jesper Frost Rasmussen, Mayor of Esbjerg, underlined the town's focus on energy transition. "Our stated ambition is to become carbon-neutral by 2030, ultimately making Esbjerg a sustainable energymetropolis in the process. This ETES project will enable us to make the quantum leap from fossil to green

energy through exploiting our vast resources of offshore wind renewables," he said.

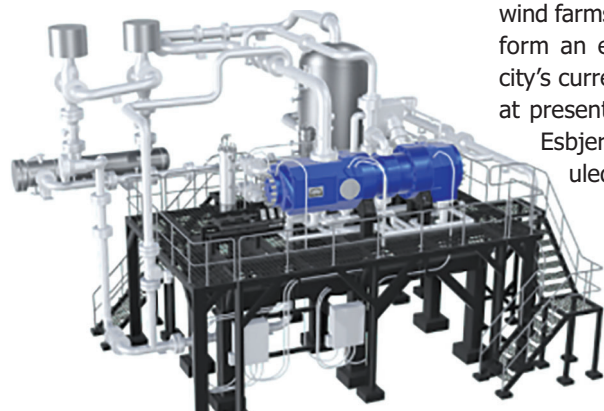
Technology behind MAN ETES

Electro-Thermal Energy Storage (ETES) heat pump systems are one of the three available configurations of electrothermal energy-storage, called MAN ETES, developed by MAN Energy Solutions Switzerland together with ABB Switzerland. The integrated technology offers heat production, storage, and reconversion into electricity.

The basic principle is the conversion of electrical energy into thermal energy, which is stored in the form of hot water and ice in insulated reservoirs. This electrothermal process not only allows the distribution of the generated heat and cold to users according to demand and margins, but also offers the option of converting it back into electricity as an additional usage variant.

ETES technology enables the use of excess renewable energy and this operational flexibility makes the energy storage adapt for grid balancing. The key feature is the use of toxicologically and environmentally-safe CO₂ as a refrigerant for the entire system-cycle.

The CO₂-based heat-pump plant in Esbjerg will be the largest of its kind ever used in the world, developers underlined. ■



Two MAN ETES heat pump systems will decarbonise Esbjerg's heat supply



IEA makes strong case for regulating downstream methane emissions

The International Energy Agency (IEA) is calling for tougher regulation on methane emissions. Downstream oil and gas – notably refining, transmission, storage and distribution – is responsible for more than 20% of methane emissions, a potent greenhouse gas. Worldwide, downstream methane emissions amounted to 16 million tons (Mt) in 2020, more than all of North America's emissions combined.

Tackling downstream emissions must be at the forefront of efforts to reduce methane emissions alongside actions to mobilise upstream suppliers to address methane abatement, IEA analysts stressed. The downstream segment could potentially avoid almost 12 Mt of emissions reductions with known technologies, analysts stressed.

Measurement technologies help detect methane leaks on oil and gas sites. Using a handheld optical gas imaging camera, the Clean Air Task Force recently documented methane leaks at over 100 sites across Europe. The visited sites included many downstream facilities, such as liquefied natural gas (LNG) terminals, compressor stations, and underground storage tanks.

Huge methane leak from Yamal pipeline

But there is still much work to be done. In the Russian Federation, leaks from gas transmission pipelines were so substantial that they were recently detected from space. Last autumn, satellites by the European Space Agency detected huge methane plumes leaking from the Yamal pipeline that carries natural gas from Siberia to Europe.

Gazprom, the Russian export monopoly of pipeline gas, did not respond to the ESA findings but is understood to be working on improving its infrastructure to avoid future large-scale methane leakage.

According to preliminary data, Gazprom produced 357.7 billion cubic meters (Bcm) of natural gas in the first 8.5 months of 2021, boosting output by 17.8%, or 53.9 Bcm compared to the same period last year. The company said it increased its gas supplies to Turkey by 57.7%, Germany by 35.8% and Italy by 15%, to name some of

the largest offtakes of Russian gas in Europe. Supplies to China via the 'Power of Siberia' gas pipeline continue growing and are "regularly exceeding the daily contractual obligations," Gazprom said.

Technology and regulations help tackle emissions

According to IEA estimates, about 75% of downstream emissions can be avoided with the help of existing technologies. Solutions such as leak detection and repair programmes or infrastructure upgrades can often drastically reduce emissions from these segments. However, regulators still tend to oversee emissions from downstream operations as these bodies are primarily responsible for gas markets, consumer prices or public safety. Further, transmission operators do not always own the gas they transport, which can limit incentives for abatement action, IEA analysts noted, suggesting there is still much room for improvement.

While many jurisdictions have taken steps to regulate oil and gas methane emissions, as seen in the IEA's Methane Regulatory Roadmap and Toolkit, most policies focus on upstream emissions. These often take the form of flaring and venting restrictions, leak detection and repair requirements or equipment mandates.

Highlighting some positive examples, the IEA said Mexico forbids methane emissions from venting or line draining of LNG pipelines (with exceptions for emergency cases). It also sets criteria for vapour recovery units from crude storage installations, including rules for how to set up, operate, and maintain these units, as well as minimum efficiency standards and limits for emitted gas. Similarly, the US Environmental Protection

Agency's (EPA) methane regulations apply to new transmission and storage facilities.

Performance-based regulation is being applied in Canada, where Alberta's Directive 060 has put in place economic provisions designed to reduce flaring and venting from pipelines and gas plants. In the United States, Massachusetts introduced a performance-based regulation that encourages natural gas distributors to upgrade their pipeline infrastructure with newer materials by setting company-specific emissions caps that decline over time. ■

NEWS NUDGES

Chevron lacks Net Zero target

US oil major Chevron is plans to further reduce greenhouse gas emissions along its oil and gas value chain, but lacks a clear Net Zero target. CEO Mike Wirth told investors and shareholders "an ultimate pathway to net zero will require technology advancements, more ambitious government policy, and development of large offset markets." Concrete steps will be revealed in next month's update to Chevron's climate change resilience report.

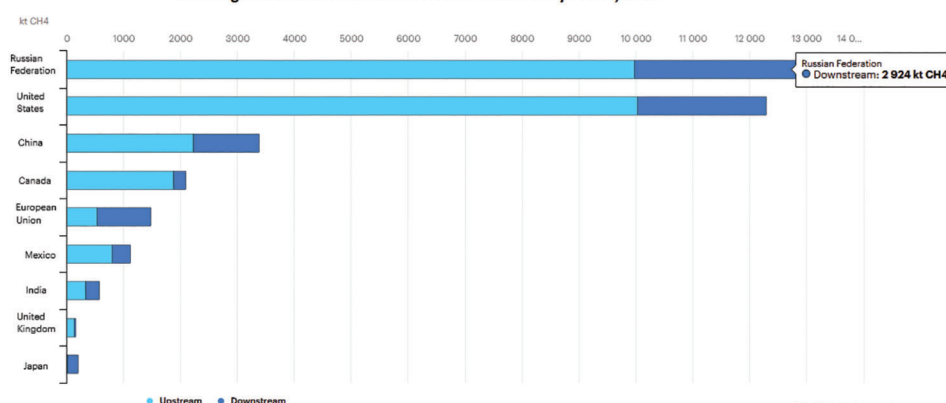
Fatih Birol on Time 100 list

The Executive Director of the International Energy Agency (IEA), Fatih Birol has been named as one of the 100 most influential people by Time Magazine in its annual list. "In a world where facts are assaulted, Fatih Birol combines the best of high-tech data, optimistic know-how and old-school rhetorical finesse," US Special Presidential Envoy for Climate John Kerry commented, suggesting the IEA head would use his authority to "slash carbon emissions and save our planet."

Global biogas market tops \$88bn in 2030

The global biogas market is set to expand at a rate of 8.4% annually and reach \$88.47 billion in 2025. According to ResearchAndMarkets, the main growth drivers are small-scale power generators that use biogas derived from municipal or agricultural waste through anaerobic digestion. Europe was the largest region in the biogas market in 2020, though Asia Pacific recorded the fastest growth.

Oil and gas methane emission in selected countries by sector, 2020





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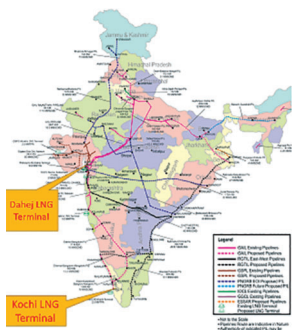
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Petronet looks at feasibility of Golapur FRSU in competition to GAIL project

Petronet plans to build an LNG import facility in India's East Coast state of Odisha. A feasibility study for a 4 mtpa Floating Storage and Regas Unit (FSRU) at Golapur Port is in the making, chairman Tarun Kapoor said, but the project would compete with another East Coast terminal at Dhamra Port, proposed GAIL and the Adani Group.

Chairman Kapoor said Petronet was finalising the feasibility study for the Golapur FSRU project which would help meet the increasing gas demand for power generation in the eastern and central part of India. "We have completed the pre-project studies and are in process of preparing the Detailed Feasibility Report (DFR) for a 4 mtpa FSRU terminal followed by a pre-feasibility report for a 5 mtpa land-based terminal in the future," he explained.

Four years ago, Petronet was planning to build an LNG import terminal at Gangavaram, in India's populous East Coast state of Andhra Pradesh but the project was shelved in 2017 due to a lack of firm demand at the time.



Render of the Haru Oni site in Patagonia

Now Petronet is making a fresh attempt in adding an LNG terminal in Odisha state, though it might not be sufficient bookings for regas capacity if the GAIL manages to get its rival Dhamra terminal built earlier, or at a lower cost. Time is of the essence as India's gas demand is not the rise, both from the industrial and power generation sector.

Shipments to India's 7 existing regas terminals amounted to 1.87 million tonnes over the summer, or around 27 cargoes. But Indian buyers have to pay significantly more for imported LNG than a year ago. The imported volumes are now costing around \$900 million per month, versus \$500 million in 2020, according to government statistics, and the LNG bill was \$3.1 billion in the four months of the current fiscal year versus

\$1.9 billion in fiscal 2020. In terms of supply, most LNG deliveries to India originate from Qatar, which provides over one-third of volumes, followed by West Africa, the US, Asian nations, Australia and the spot market. ■



Siemens supplies HVDC technology for UK-Ireland power link

Siemens Energy, together with consortium partner Sumitomo Electric, has signed a contract with Greenlink Interconnector to deliver high-voltage direct current (HVDC) converter technology for the 190km UK-Ireland electricity interconnector. Works for the bi-directional 500 MW power link will commence at the start of 2020, following financial close.

HVDC technology is the most efficient means of transmitting large amounts of electricity over long distances. Under the contract with Greenlink Interconnector, Siemens Energy will be responsible for designing and building the two converter stations situated near the Great Island substation in County Wexford, Ireland, and the Pembroke substation in Wales.

Both converter stations will use HVDC PLUS technology with modular multi-level arrangement (VSC-MMC) to convert Alternating Current to Direct Current and vice versa. Linked via a polyethylene HVDC XLPE cable system by Sumitomo, the substations will facilitate low-loss transport of electricity with a voltage of 320 kilovolts.

GreenLink will allow for the import of wind power from Ireland to higher-priced UK energy market, which bolsters European energy security, and helps enhance the integration of renewable energy; and James O'Reilly, CEO of Greenlink underlined the company aims for a successful commissioning of the power link in 2024. ■

8 Rivers works with Navigator Terminals on NET power plant at Teeside

US-based 8 Rivers Capital has teamed up with Navigator Terminals to enter the UK market for handling and storing carbon dioxide, hydrogen and ammonia. The pilot project of the two partners is the Whitetail 300 MW 'Net Zero' power station at Teeside (NET), where nearly all air emissions will be eliminated while the CO2 will be captured and stored offshore.

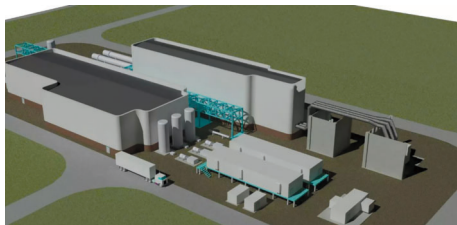
Whitetail, together with Sembcorp Energy UK and NET Power, are working to build and commission the 300 MW NET power station by early 2025. The Net Zero plant will utilise the NET Power technology, which combusts natural gas with

oxygen, rather than air, and uses supercritical CO2 as a working fluid to drive a turbine instead of steam. In consequence, nearly all air emissions, including traditional pollutants and CO2, can be eliminated. Thereafter, and pipeline-quality CO2 is produced that could then be transferred to Navigator's storage terminals or transferred onwards by ship or pipeline to its final destination.

Cam Hosie, CEO of 8 Rivers Capital said the partnership was the company's latest step to help commercialise hydrogen technologies. "But on the CO2 is captured we need to explore, understand and deliver infrastructure to support these assets to successfully transfer, transport and store CO2 to

permanent storage locations," he cautioned.

Sustainable industrial projects have seen a sharp rise in northeast England which has led to the creation of an East Coast Cluster and formal collaboration between Northern Endurance Partnership (NEP), Net Zero Teesside and Zero Carbon Humber. Humber and Teesside are responsible for nearly half of the UK's industrial CO2 emissions. The East Coast Cluster is hence instrumental in reaching the UK's decarbonisation targets and delivering on CCUS and hydrogen projects, which could potentially create more than 25,000 jobs a year between 2023 and 2050 and capture, transport and store up to 27 million tonnes of CO2 emissions a year by 2030. ■



Render of Teeside NET Power Plant

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