



US-China trade remain fractious under new Biden administration

Joe Biden's inauguration as US President on Wednesday heralds major policy shifts on trade with China and climate goals. The China's Phase 1 trade commitment to buy an additional \$52.4 billion of energy from the US by end-2021 will remain in place, though analysts say it looks "difficult to achieve."

Lower oil prices, reduced US crude production and limited recovery in crude processing capacity in China are all factors that reduce the likelihood of China living up to its trade commitments.

"Crude imports from the US ramped up in 2020 to about 350,000 barrels per day (b/d) on average, but still way below the required amount of more than 1.5 million b/d to meet the deal. China's temporary lifting of the LNG import tariff has helped increase volumes, but by nowhere near enough to fill the gap left by reduced crude imports," said Wood Mackenzie's research director Sushant Gupta.

US officials reckon China may have to issue waivers or further adjustments to tariffs to meet its buying commitments, notably of American crude oil and LNG.



Prices volatility increases as economies recover

Oil and natural gas prices are likely to become more volatile in the coming month as major economies are returning to growth as

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Bakken Midstream to supply ethane to US baseload power plant

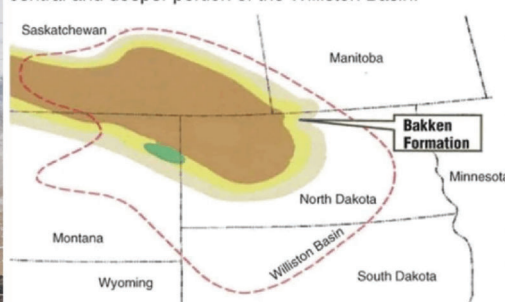
Bakken Midstream Natural Gas, infrastructure developer in North Dakota, has signed its first ethane supply term sheet with Williston Basin Energy Center, a large baseload power plant. Advanced combustion technology allows the Williston plant to primarily run on ethane which is otherwise flared in the fracking process.

The state of North Dakota overall produces an estimated 350,000 barrels of ethane per day. It is typically separated from the fracked natural gas and used for producing ethylene, though considerable amounts of the ethane gets flared.

Seeking to address the challenges ethane poses to North Dakota's oil and gas industry, Steven E. Lebow, chairman of Bakken Midstream, said: „We set an extremely high bar for ourselves with the mandate to re-imagine what is possible and reengineer what exists to mitigate natural gas flaring, enable additional oil production



The Bakken Formation was deposited in the more central and deeper portion of the Williston Basin.



and productively utilize ethane through ethane-fuelled power generation projects."

Construction to start in 2022

Bakken Midstream secured nearly \$25 million in October 2020 from two separate capital raises

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Covid-related restrictions are gradually lifted and energy demand recovers.

"Impact from inflation and foreign exchange [on commodity prices] is possible depending on how Biden funds his proposed US\$1.9 trillion stimulus," Gupta said, suggesting: "If it comes from drawing down past inflows to Asia, price volatility could increase."

Reversing parts of Trump's energy policies, the new US President vowed to bring

US back in to the Paris Agreement takes care of a lingering uncertainty in energy markets. According to WoodMac's research director Prakash, "energy companies and investors across Asia "can breathe a sigh of relief and plan strategies accordingly."

US and NOCs step up green energy ambitions

"With the US back in the Agreement, we can

expect a surge in net-zero 2050 policy announcements. If US Majors such as Exxon-Mobil and Chevron also raise their climate ambitions in response, then Asian national oil companies like CNOOC, PTT and ONGC, will come under pressure to do more, he said, suggesting this could lead to a race in securing resources for the clean energy sector including semi-conductors, battery metals, renewables supply chains. ■

LNG price rally set to slow as Asia gives way to warmer weather

Asia's latest LNG price rally will likely slow soon as a cold spell across China, Japan and South Korea is forecast to give way to milder weather. Spot LNG prices surged by nearly 200% last month, but analysts at IHS Markit say the rally should ease once temperatures rise and more supply returns to the market.

Temperatures are expected to rise above average levels for this time of the year in Shanghai, Seoul and Tokyo over the next few weeks, bringing down prices for spot LNG cargoes delivered into North Asia in March. The February contract of Platt's Japan-Korea Marker (JKM) for North Asia LNG spot cargoes was last seen trading at \$18.57 per MMBtu, while forecast for milder weather brought down prices for the JKM March-2021 contract to \$10.25 per MMBtu.

With prices spreads widening between the US Gulf Coast and the Northwest Europe

free-on-board (FOB) cargoes against the JKM North Asia spot price, the bulk of available spot cargoes has been diverted to Asian markets. "All available tonnage was fixed in a frenzy by charterers," shipbrokers SSY noted, "and portfolio players were eager to cover Atlantic liftings in January and February, leaving all three major basins practically drained of prompt freight."

Supply constraints ease as Prelude FLNG returns

Easing supply constraints will also add a bearish element to prices. Throughout

December and January, multiple LNG production outages including a compressor failure at Qatar's Train 4 and South Korean coal caps have led to an upward spiral in JKM prices.

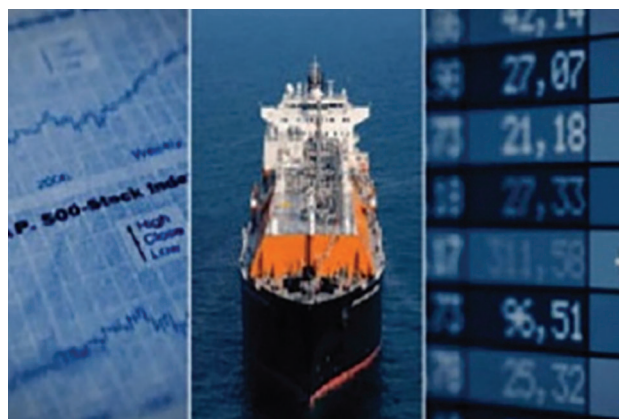
The return of additional LNG supply volumes - notably as Shell's Prelude floating liquefaction unit resumes operations - will ease supply constraints and bring down prices. "U.S. LNG cargoes that

are produced today can also reach Asia in 38 days, even if they travel via the Cape of Good Hope, so prices should definitely ease by mid-February," IHS Markit analysts said.

Ongoing delays for LNG tankers transiting the Panama Canal delays were lately worsened by fog on top of the pandemic precautions, shipbrokers said. "The rapid increase in tonnage attempting to transit and Covid-19 restrictions for pilots and essential staff at the locks increased the waiting time for transiting without a slot by as much as 12-14 days," SSY said in a market note. "These delays disturbed the schedule of several players who in turn had to buy spot cargoes to backfill shorts created by Panama delays."

Chinese buyers turn to pipeline gas

Price-sensitive Chinese buyers are understood to be holding back at current levels. Utility buyers in China are reluctant to pay anything above \$15 per MMBtu given that they can also revert to pipeline gas, imported from Russia and Turkmenistan, or domestic supplies. ■



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dedicated for ethane-fuelled power generation projects and related pipelines. Construction on the \$400 million Williston power plant is expected to begin in 2022.

"With this Energy Center we have realized the first step of our broader value-added vision," Lebow said. However, development of the baseload plant still hinges on final operational and power purchase agreements.

Higher heat content

Though the Covid-19 pandemic has slashed US energy demand and domestic oil and gas

production, ethane flaring remains an issue for fracking companies, especially for small wildcatters. "Despite lower oil production over the past year, associated gas will continue to be an issue for producers unless a value-added industry is developed right here in the state," said Bakken Midstream CEO Mike Hopkins.

Ethane has a higher heat content than pipeline quality natural gas," he explained, "and leaving high volumes of ethane in the natural gas stream limits export capabilities and adversely impacts the downstream consumers of North Dakota's natural gas." ■

Nord Stream 2: US to levy sanctions against Russian pipe-laying ship

The United States, on President Trump's the last day in office, has informed German officials its plans to levy sanctions on the Russian pipe-laying vessel 'Fortuna' and its owner, KVT-RUS, effective today. 'Fortuna' is building the Gazprom-led Nord Stream 2 pipeline, opposed by Washington as it raises Germany's reliance on Russian gas.

Fortuna is currently anchored in the Baltic Sea near Rostock in northern Germany, according to ship-tracking data. US sanctions against the vessel and its owner will go into effect as part of Countering America's Adversaries Through Sanctions Act (CAATSA).

German and European officials have told Washington not to use the new CAATSA sanction to meddle in the EU's energy policies. Still, the US is determined to take "all necessary and appropriate steps" to prevent Nord Stream 2 in the hope that Germany will reconsider its position on Nord Stream 2.

Construction of the second Nord Stream 2 pipeline leg is nearly completed – except for a final stretch of about 120 km. Pipe-laying works on that final part of the overall 2,460 km gas pipeline were meant to

be completed this year. Once completed, the two-leg interconnector would be able to transport up to 110 Bcm of Russian gas through the Baltic Sea to Germany and neighbouring countries.

Germany says US should not dictate the EU's energy policy

The German government stressed its stance will "remain unchanged," stressing the pipeline is a private sector project. Russia's state-owned Gazprom is implementing the project jointly with Uniper, Wintershall, Engie, OMV and Shell.

European officials said they reject extraterritorial sanctions, criticising interfer-

ence in their sovereign right to set energy policy. Germany's foreign minister Heiko Maas said that "no state has the right to dictate its energy policy to the EU. And that will not succeed either."

Threat of US sanction had earlier prompted the Swiss pipe-laying firm Allseas to suspend works on the project. Norwegian-German registrar and classification society DNV-GL also pulled out in December, saying it will no longer supervise progress on the controversial pipeline project and provide services that may be incompatible with US law. ■



Fortuna is currently moored near Rostock

Biden's ban on fracking could dump America into recession; DoE warns

The US Department of Energy's Office, staffed by the outgoing President Trump, has launched a report on impacts of the so-called "ill-conceived ban on hydraulic fracturing," proposed by the incoming administration of President-elect Joe Biden. The ban will allegedly cost millions of jobs and make gas and power prices surge.

Sustained shortages of cheap shale gas would cost millions of jobs and make gasoline and electricity prices much higher for all Americans while risking a recession, the report reads.

Fracking for shale oil and gas has boosted US trade revenues over the past years and provided ample feed-gas supplies to export LNG to 39 countries. "A ban would end the US role as the world's largest oil and

natural gas producer and would force the United States to become a net importer of oil and gas once again," the report said, warning this would weaken the US' geopolitical interest.

Ban would derail economic recovery

Assistant Secretary for Fossil Energy Steven Winberg pointed hydraulic fracturing had tapped the "great reservoir" of America's natural resources. "That technology made the US the world's largest oil and natural gas producer, while also creating high-paying jobs and delivering great consumer savings," he said, warning of "devastating" impacts of a ban.

"Banning this technology would derail our recovery from recent Covid-related economic

disruptions and increase the risk of another recession," he stated. US LNG exports helped to reduce the trade deficit in 2019 and created \$9.5 billion in revenue.

Risk of higher fuel costs

Households and the US energy-intensive industry would have to shoulder higher costs for gasoline and diesel if fracking was banned. According to DoE findings, annual average gasoline prices would increase over 100% to over \$4.20 per gallon in 2022 and 2023, and annual average diesel prices would increase 95% to \$4.56 per gallon in 2022.

The shale revolution also led to a significant shift from coal to gas in the power sector, lowering emissions. Natural gas currently fuels more than one-third of US electric power plants and these flexible gas peaking plants are vital to grid-integrate intermittent supply of wind and solar power. ■



Natural gas fracking operations in Marcellus Shale

Spectrolytic's new in-line measure monitors gas turbine oil condition

Edinburg-based Spectrolytic has developed an in-line measurement system for oil condition monitoring. The system streams key parametric data of the oil condition to a machine control centre, customer intranet or cloud, providing the customer with real-time process control.

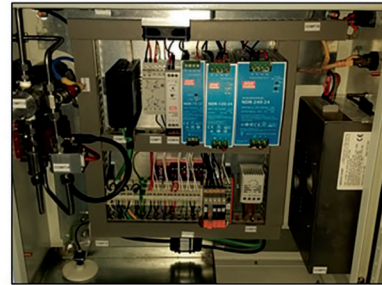
Conventionally, gas engines for power generation rely on taking oil samples periodically and sending them to a laboratory for analysis but this process is very laborious and prone to delays. With real-time monitoring of the oil condition, customers benefit from faster reaction time to failures or trends, which allow them to extend oil change intervals and minimise engine downtime.

Spectrolytic's Inline Oil Condition Monitoring System, also called the Fieldkit is a plug and play installation. It can be integrated into the main oil flow of the engine or in a bypass flow from the oil sump or oil tank. The kit's analytical method is identical to the one used in oil laboratories.

Housed inside the Fieldkit, the MIRS8-T oil condition sensor is an innovative inline mid infrared (MIR) spectrometer that extracts the relevant oil condition information



Fieldkit



Inside fieldkit - components



MIRS8-T sensor

from chemical changes in the oils' infra-red absorbance signature.

The MIRS-T oil condition sensor within the fieldkit can be customised. The standard sensor configuration works well with most gas engine oils that are comprised of Group 1-3 base oils and a range of additives (dispersants, bases, anti-oxidation, anti-corrosion).

The data, collected by the monitoring

system, consists of oil condition parameters, temperature, pressure, flow-rate. The user can define and set the limits for each parameter to flag any trends or step changes in the behaviour of the oil condition.

The flexible fieldkit can be used for various equipments, including steam, gas, or hydro turbines for power generation, large gas compressors, and in a miniaturised form for automotive engines on heavy vehicles. ■

ENGIE and Singapore University look into liquid air energy storage

French utility ENGIE will work with NTU Singapore and infrastructure developer Surbana Jurong on storing energy in liquid air. Excess electricity from the grid is used to cool air, turning it into a liquid state that is 750 times more compact and has the energy density of a lithium-ion battery.

Air can be liquefied and stored at -196 degrees Celsius, mostly by using excess renewable energy. When energy is needed, the liquid air is turned back into a gaseous state, which creates high air pressure that can power a turbine to generate electricity. The cold energy from the process can also be harvested to chill water for use by chilled water air-conditioning systems in buildings.

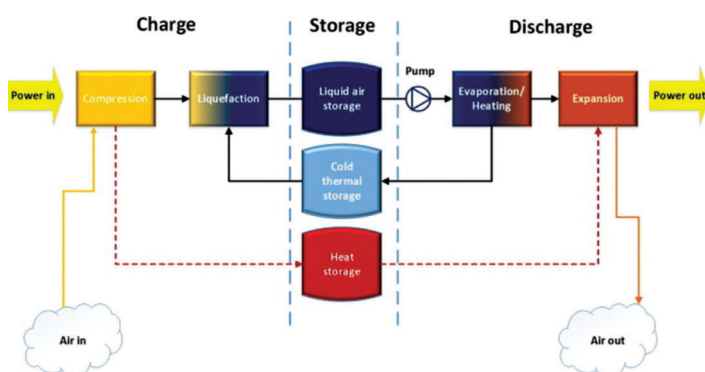
A liquid air energy plant is estimated to last for 25 years or longer as it does not have any electrodes, cathodes or anode ma-

terials that degrade after hundreds of charge and discharge cycles like a battery. In contrast, it needs only storage containers and generators to harvest its energy potential, making it a greener and more sustainable alternative.

Testing nitrogen use

The aim of the collaboration is to "test and develop cryogenic-related solutions that can help remove carbon emissions and improve energy efficiency," said Yeo Choon Chong, CEO of Surbana Jurong's ASEAN Division.

By using nitrogen in a liquid air storage system, it is possible to provide cooling and electricity to data centres with zero-emissions at point of use. Researchers say this practice offers "a valid solution to replace diesel backup power generators." ■



Scheme of liquid air energy storage

NEWS NUDGES

Mitsubishi produces methanol in Trinidad

Mitsubishi Gas Chemical Company has launched commercial operations of a methanol and dimethyl ether plant in Trinidad and Tobago. The plant has an annual production capacity of one million tons of methanol and 20,000 tons of dimethyl ether, which can be used as an alternative fuel for cars and power generation.

First 8-cylinder B36:45 engine delivered

Rolls-Royce has delivered the first 8-cylinder variant of its Bergen B36:45 gas engine to a tomato producer in Belgium. The medium speed genset is planned for delivery this spring and will drive an onsite power plant that generates 4700 kW electricity and 5520 kW heat. The new engine offers a 20% increase in power per cylinder and will replace an existing Bergen 12-cylinder B35:40 genset. ■



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AFC Energy cooperates on hydrogen fuel cells with Ricardo

Alkaline fuel cell producer AFC Energy is collaborating with Ricardo hydrogen applications. The two US-based companies agreed to jointly develop and commercialise hydrogen fuel cell products and services with an initial focus on marine, rail and stationary power generation.

Building on AFC Energy's alkaline fuel cell technology platform, 'H-Power', the partners aim to design and delivery of high-quality and innovative solutions and explore new routes to market. Alkaline fuel cells use a mix of potassium hydroxide in water as the electrolyte, as well as a non-precious metal as catalyst.

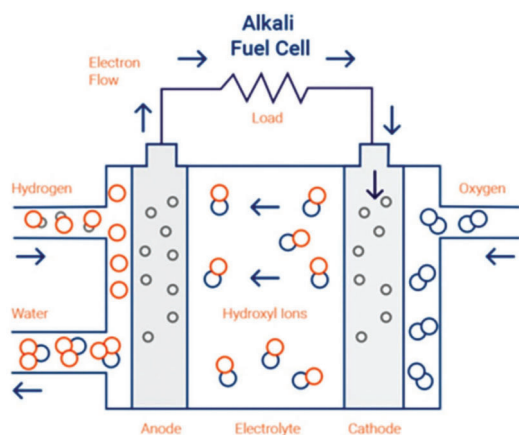
Lately, alkaline novel fuel cells use a polymer membrane as the electrolyte. In contrast, PEM fuel cells solid polymer as an electrolyte and a platinum alloy catalyst.

Ricardo has been advising US industry and government clients on hydrogen strategies for two decades. Together, the two companies have already submitted proposals for fuel cell application to power network

operators, addressing grid resilience and zero-emission alternative power sources.

Adam Bond, chief executive officer at AFC Energy, said: "Our collaboration with Ricardo follows a number of months of discussions between both parties and I am confident that the quality and breadth of their work will lead to an enhanced product range and a greater number of end customers in key industrial sectors."

Mike Bell, Growth Strategy and Transformation Director at Ricardo, underlined the company's mission to deliver clean efficient solutions across a wide range of sectors. "This collaboration with AFC Energy enables Ricardo to increase the range of hydrogen and fuel cell solutions we can provide to our clients," he said. ■



McDermott studies ways to expand liquid hydrogen storage

US natural gas producers have asked McDermott to carry out a study into how to best expand current liquid hydrogen storage capacity limits. CB&I, part of McDermott, specialises in cryogenic storage and is currently building the world's largest liquid hydrogen sphere for NASA.

The award of the study, funded by large US upstream players, shows that industry leaders recognize that „effective, affordable storage solutions are imperative to achieve a sustainably powered future,” said Samik Mukherjee, McDermott's senior VP for Projects.

CB&I Storage Solutions, part of McDermott, is designing and building field-erected spherical cryogenic hydrogen storage, tanks and terminals. The company has completed more than 59,000 structures throughout its 130-year history.

"In 1960, we built the first liquid hydrogen sphere with the capacity to store 170 cubic meters. Over the last sixty years, we have expanded that threshold by about 30-fold to 5,000 cubic meters," said Cesar Canals, Senior Vice President of CB&I Storage Solutions. The liquid hydrogen sphere, under construction for NASA at Cape Canaveral, will provide the capacity to store 1.25 million usable gallons of liquid hydrogen to support the Moon to Mars Exploration programme. ■

Siemens Energy develops clean hydrogen fuels in the UAE

Siemens Energy has teamed up with Abu Dhabi state investment firm Mubadala to establish a hydrogen value-chain in the United Arab Emirates (UAE). Together with Masdar, Siemens wants to build a demo plant powered by a solar PV electrolyser to produce green hydrogen to fuel cars, planes and ships.

Mubadala CEO Musabbih Al-Kaabi said the strategic partnership with the German manufacturer is aimed at leveraging Abu Dhabi's geographic advantages for producing and selling green hydrogen, which is meant to be supplied to emerging global markets.

Hydrogen to be used for aviation and shipping

The first phase of the hydrogen demo programme will produce green hydrogen for passenger cars and busses in the Masdar City area. In parallel, a kerosene synthesis plant will be built to convert most of the green hydrogen into sustainable aviation fuel.

The Masdar pilot project is supported by some leading aviation companies, including Etihad Airways and German Lufthansa as well as Marubeni and Khalifa University. The aviation partners will pioneer the use of green hydrogen and synthetic kerosene.

The second phase of the Masdar pilot project will explore the production of decarbonised fuels for the shipping sector.

Siemens Energy uses its Proton Exchange Membrane (PEM) technology to convert electricity from renewables into 'green' hydrogen and oxygen, without any waste byproduct or emissions. The hydrogen can then be stored for use in fuel-cell cars, as an industrial gas or to fuel a power plant. ■



Cryogenic storage is used for liquefied gases

GE secures HA turbine equipment order to add 1 GW in South Korea

General Electric has been contracted to deliver more than 1 GW of power gen equipment for the Tongyeong combined cycle power plant in South Korea. Construction is set to begin in 2021 by Hanwha E&C with a view to starting commercial operations in 2024.

The 1,012 MW plant, owned and operated by Tongyeong Eco Power, will be fuelled by LNG. It will be built at the site of Seongdong Shipbuilding & Marine Engineering in Tongyeong and include one 200,000-cbm storage tank. Once operational in about three years' time the CCGT will deliver the equivalent electricity needed to power more than 1 million Korean homes.

For the project, GE will supply two of its industry-leading 7HA.02 gas turbines, one STF-D600 steam turbine, two Heat Recovery Steam Generators (HRSG) and three H65 generators. The American manufacturer also signed 18-year services agreement to provide maintenance for the equipment.

HA turbines can run on hydrogen

Chris Khang, President & CEO of GE Korea is convinced that gas power will play "a critical

role" in helping the country transition to a lower carbon energy sources. "Natural gas-fired combined cycle power plants are the lowest emitting fossil fuel power plants, whether measured based on CO₂, SO_x, NO_x, particulate matter, or mercury," he said, explaining:

"Our H-class gas turbines are highly fuel flexible and able to operate on a variety of fuels, including blends of hydrogen and natural gas to offer Tongyeong Eco Power multiple pathways to achieve lower or near-zero carbon operations, if needed in future".

In South Korea, GE's gas turbines provide more than 14,000 MW of generation

capacity with an installed base of over 74 units. The manufacturer has been present in Korea since 1976 and in five years ago it acquired Doosan's HRSG manufacturing business Changwon, where the HRSG pressure part modules for the Tongyeong project will be built.



Render of Tongyeong CCGT at the site of Seongdong shipbuilding

NFE partners with Petrobras to develop LNG-to-Power project in Brazil

New Fortress Energy (NFE) has signed a memorandum with Petrobras Distribuidora and CCETC Brasil Holding to acquire 288 MW of 15-year power purchase agreements for an LNG-to-Power project, under development at Suape Port in Brazil. The regas terminal and the power plant are slated to start operation by the end of 2022.

Under the memorandum, BR and CCETC intend to sell to NFE their entire ownership in the Brazilian power generation companies Pecém Energia and Energética Camaçari Muricy II S.A., which hold PPAs totaling 288 MW in the Suape Port project. A definitive sale and purchase agreement is meant to be executed occur before the end of January, subject to final approval by Petrobras.

Striving to expand its foothold in the fast-growing Brazil energy market, NFE has also entered a definitive agreement to buy CH4 Energia which owns key permits to develop the LNG regas terminal and an adjacent gas-fired power plant with up to 1.37 GW capacity in the city of Ipojuca, near Suape Port.

Plans to move power plant site

NFE said it plans to satisfy the PPA obligations by moving the site and moving the site



Suape Port in the Brazilian state of Pernambuco

and building a 288MW gas-fired power plant and LNG import terminal directly at the Suape Port. To realise its plan, NFE already has the necessary regulatory approval from ANEEL in place.

New York-based NFE is developing a growing LNG projects portfolio in Latin America and the Caribbean. The Suape Port project is slated begin commercial operations by the end of 2022 and is intended to provide gas and power to within the port complex and across the greater Northeast region of Brazil.

NEWS NUDGES

Fortistar invests in hydrogen

Fortistar, a privately-held fund, has joined an equity investment of up to \$157 million in hydrogen producer BayoTech. Cottonwood Technology Funds and the New Mexico State Investment Council also participated in the latest financing round. BayoTech's systems produce local hydrogen close to the application, serving end users in the industrial gas and petrochemical segment as well as those who use of hydrogen to power fuel cells.

GE sues Siemens Energy

General Electric has sued its German rival Siemens Energy over the alleged use of stolen trade secrets to win gas turbine contracts worth several billion dollars. GE told the US district court in Virginia that Siemens received the secret information from a Dominion Energy employee.

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