



Hitachi shutters Horizon arm by March, makes UK rely more on gas

Japanese developer Hitachi has decided to shut its Horizon subsidy by March 31, 2021, as it abandons plans to build a £20 billion (\$27bn) nuclear power station at Wylfa on Anglesey. The move is set to increase the UK's reliance on gas for power generation, next to renewables.

Tokyo-based Hitachi already announced its withdrawal back in September, having been unable to secure financing and a related commercial arrangement. Still, Horizon CEO Duncan Hawthorne insisted at the time discussions with multiple parties were encouraging and there would be "a way forward in Hitachi's absence." Now, things it turns out to be different. The site of the Wylfa nuclear project might soon be up for grabs and has already attracted interest from a consortium of potential buyers including Bechtel, Southern Company and Westinghouse.

Gas, renewables left to fill the gap

With the Wylfa nuclear project shattered, Britain's security of power supply again largely relies on new thermal power plants- despite the government's pledge to cut greenhouse gas emissions by at least 68 percent by 2030, from 1990 levels. The new national climate plan still allows for a "very limited exception for gas-fired power plants and other projects," which now gains importance.

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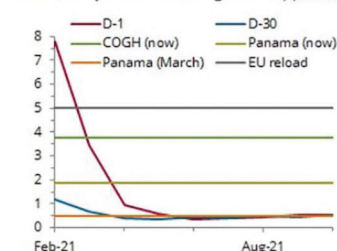
Northeast Asia utility buyers draw European LNG in January

Very cold weather across Northeast Asia, especially in South Korea, has spurred a flurry of spot LNG purchases from electric utilities for February. JKM month-ahead prices are more than double the current TTF value —far higher than necessary to divert all available spot supply from the Atlantic basin.

Energy Aspects reckons the exceptionally high JKM M+1 market is the result of some firms being in distress and unable to postpone deliveries, likely because they would fall short of contractual supply commitments to Asian buyers. Northeast Asian LNG demand is forecast to reach 6.2 million tons y/y in the first quarter, with Japanese and Korean demand this month alone is set to rise by at least 1.1 million tons.

Gunvor was reported by Argus to have sold a cargo to Trafigura for \$20.80 per million British thermal units (mmbtu) for South Korean delivery

JKM-TTF spreads and freight diffs., \$/mmbtu

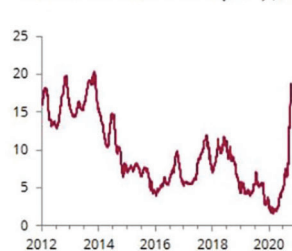


Source: CME, Fearnleys, Energy Aspects

*freight diffs. are the increase in freight costs for

US cargoes going to Northeast Asia instead of Europe

Northeast Asia half-month price, \$/mmbtu



Source: Argus Media Group, Energy Aspects

over 4–8 February - far higher than normal. According to Energy Aspects figures, the delivery price for a Northwest European reload to Northeast Asia for delivery in late February–early March is between \$11.90/mmbtu and \$6.90/mmbtu at

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Hinkley Point C is now the only nuclear power project left in Britain. But with Wylfa off the table, it is up for natural gas, coal and renewables to fill Britain's growing capacity gap. Recent analysis by the UK Department for Business, Energy and Industrial Strategy (BEIS) sees renewables overtaking gas in 2021.

New nuclear faces deep challenges, while

renewable energy is now "cost-competitive with fossil fuels" and offers "a cheaper and better way forward," argues Prof Paul Dorfman, Energy Institute at University College London.

The projections include less than half as much new gas capacity by 2035 as expected last year and a quarter of the 2015 figure. In contrast, by 2035 BEIS now expects

twice as much renewable capacity as it did in 2015, and twice as much battery storage capacity as projected last year.

However, the UK is still set to miss its legally binding carbon targets, BEIS projects, with emissions from transport and homes falling slowly or not at all. The gap to meet targets is meant to be closed as its plans and policies are fleshed out. ■

Mitsubishi Power aspires to turn green energy solutions into profits

Ken Kawai, CEO of Mitsubishi Power has defined the manufacturer's 2021 goals as accelerating hydrogen and ammonia cofiring while enhancing economics. "High expectations are held," he said, for Mitsubishi Power to "improve its productivity" – not least because the unit accounts for 30% of MHI Group's business.

Today, the energy industry needs to adapt to the rapidly falling contribution of coal-fired power generation and the subsequent drop in new-build coal units. Flexible combined-cycle power plants often outcompete ageing coal units on operational costs and the global trend towards decarbonisations is driving electric utilities to embrace the use of greener fuels, and flexible units to complement renewables.

Stepping up competitiveness in green solutions

Looking towards a challenging 2021, the Mitsubishi Power CEO said: "This year we will undertake three core missions: to achieve solid progress in enhancing our competitive strength, to expand business and pursue a growth strategy focused on decarbonisation, and to renew our commitment to safety awareness."

Kawai urged all employees to "take these crucial demands to heart" for the company to improve its productivity.

Shifting from thermal fuels to hydrogen cofiring

As a first step, MHI wants to curb carbon emissions by turning away from thermal power generation by targeting green fuels like hydrogen and ammonia. The fuel shift is triggered by the company's quest to rebrand as an energy solutions company, pool the company-wide knowledge to develop novel green technologies that match markets' needs.

Adapting to local circumstances in each

country where the wider MHI Group is active, the Japanese manufacturer seeks to create a business model that "will enable us to transform solutions into profits," the Mitsubishi Power CEO underlined.

By going green, Mr Kawai aspires to "make Mitsubishi Power a company that will always win, and deserve, the solid trust of society." He pledged to do "everything possible" to fulfil his leadership duties in a responsible manner. ■



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the TTF and \$5.00/mmbtu of shipping costs at prevailing charter rates.

"Northeast Asian buyers appear willing to pay for the delivery of Atlantic basin supply at any price, given resilient demand, the cold risk and shortfalls in supply from other producers," analysts commented.

Buyers turn to reloads for March delivery

The current inability of Pacific basin buyers to secure spot cargo at short notice makes them turn to European reloads for March

delivery, instead.

Spot charter availability remains extremely low, but the full operational fleet of LNG carriers is not fully employed. "We have seen reloads continuing out of Europe despite the tight freight market.

"We also think that portfolio players with sufficient length in shipping will be able to pick up cancelled cargoes, due to a lack of shipping capacity, by some US offtakers for February," they said, expecting "this will mostly mitigate the cancellations for the month." ■

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Taiwan's CPC imports first US LNG under 25-year deal with Cheniere

Taiwanese energy company CPC Corp has just received its first shipment of US LNG from the Corpus Christi export plant in Texas under a 25-year supply deal with Cheniere Energy. Taipower, the island's main utility, also strives to import LNG for power generation, separately from CPC.

The first US LNG cargo from Cheniere's Corpus Christi export plant in Texas arrived in Taiwan on January 10 and was unloaded at the Tai-Chung regas terminal. Cheniere agreed to supply 2 mtpa of LNG to Taiwan for 25 years with the purchase price linked to the US benchmark Henry Hub.

Taiwan and US energy companies have entered a long-term cooperation which opens up a new supply source Taiwan's expanding LNG imports, CPC said in a statement. As Asia's fifth largest LNG importer, Taiwan's annual LNG requirements have risen to nearly 17 million tonnes per annum (mtpa).

Eager to import more LNG for power generation, CPC has expanded the Tai-Chung regas terminal and is currently developing a new import terminal in Datan Borough at Tao-Yuan, northern Taiwan, which is due to start operations in 2023.

Taipower, the island main utility, is also taking steps to import LNG for power generation and as it plans to develop its own regas terminals, one near Tai-Chung and a second at Hsieh-Ho in North Taiwan. State-owned Taipower signed two non-binding LNG supply deals, with imports designated



for its CCGT project at Taichung, where unit 1 of 2 is scheduled to start up in early 2024.

The Taiwanese government estimates LNG imports will grow from 150,000 tonnes in 2023 to 3.6 mt in 2032. This growth estimate is based on fuel demand for 1,300 MW of gas-fired generating capacity at a 65% utilisation rate. Taipower currently operates five gas power plants with a combined capacity of over 11,360 MW. ■

Solar, wind make up over 70% of new US power gen capacity in 2021

Developers and electric utilities in the US plan to add 39.7 GW of new capacity this year. Solar will account for the largest share of new-build capacity at 39%, or 15.4 GW, followed by wind at 31%, or 4.1 GW, while planned gas-fired capacity amounts to 6.6 GW.

Additions of new solar PV will set a fresh record this year with 15.4 GW designated to be added to the grid, significantly more than last year's capacity increase of nearly 12 GW. Most of build-out of nearly 5.7 GW was scheduled to take place in the last two months of 2020, though the pandemic might have caused some delays, compared to 6 GW added from January to October that year.

Texas is currently the centre of the US solar power boom, where 28% of the new-built or planned capacity is located, followed by Nevada and California with both 9% built-out. The US Energy Information Administration (EIA)'s latest Short-Term Energy Outlook forecasts an additional 4.1 GW of small-scale solar PV capacity to enter service by the end

of 2021.

Wind power, by contrast, is slowing with some 12.2 GW scheduled to come online in 2021, compared to 21 GW last year. Texas and Oklahoma account for more than half of the 2021 wind capacity additions, spearheaded by the 999 MW Traverse wind farm in Oklahoma that is scheduled to commence operations before the end of this year.

Battery storage set to quadruple

For 2021, planned natural gas capacity additions are reported at 6.6 GW. Combined-

cycle generators account for 3.9 GW, and flexible open-cycle combustion-turbine generators account for 2.6 GW. More than 70% of these planned additions are in Texas, Ohio, and Pennsylvania.

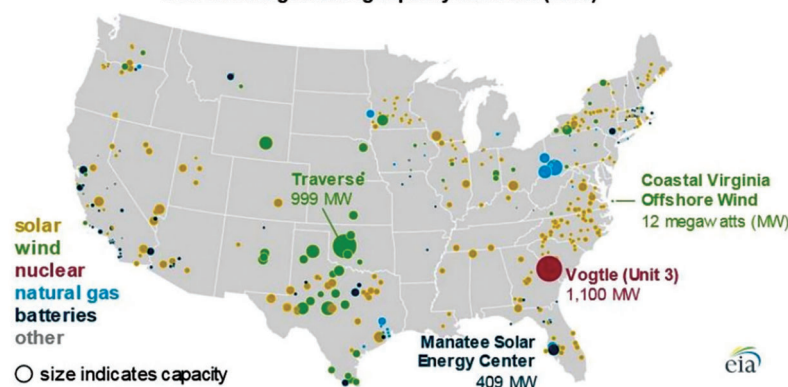
Utility-scale battery storage is expected to more than quadruple; about 4.3 GW of battery power capacity additions are slated to come online by the end of 2021.

"The rapid growth of renewables, such as wind and solar, is a major driver in the expansion of battery capacity because battery storage systems are increasingly paired with renewables," EIA analysts pointed out. The world's largest solar-powered battery (409 MW) is under construction at Manatee Solar Energy Center in Florida; the battery is scheduled to be operational by late 2021.

Trend for hybrid installations

Hybrid installations of wind or solar power paired with energy storage, particularly batteries, is increasingly in demand as the cost of battery storage keeps falling. According to planned installations reported by US electric utilities and developers to EIA, another 56 facilities pairing renewable energy and battery storage will come online by the end of 2023. ■

U.S. electric generating capacity additions (2021)



source: U.S. Energy Information Administration, Preliminary Monthly Electric Generator Inventory, October 2020

Economic recovery in 2021 to trigger short-lived rebound in coal-burn

An economy recovery in 2021 is expected to trigger a rebound in coal demand, though a short-lived one. The International Energy Agency (IEA) forecasts a 2.6% rise in global coal demand in 2021 – spurred by China, India and Southeast Asia – while Europe strives to stage a ‘green recovery.’

Coal-burn for power generation has fallen to historic lows over the past two years, led by unprecedented drops in the United States and Europe, the IEA's Coal 2020 report finds. Weak electricity demand growth and low natural gas prices already pushed coal-burn down 1.8% in 2019, and the economic fallout from the coronavirus crisis made coal demand plunge by a further 5% in 2020.

“The Covid-19 crisis has completely reshaped global coal markets. Before the pandemic, we expected a small rebound in coal demand in 2020, but we have since witnessed the largest drop in coal consumption since the Second World War,” said Keisuke Sadamori, the IEA's Director of Energy Markets and Security. “The decline would have been even steeper without the strong economic rebound in China – the world's largest coal consumer – in the second half of the year.”

Coal beyond its peak

China, the country hit by the pandemic has also been the fastest to emerge from it. Higher industrial output and electricity use in 2021 is forecast to push up coal demand by 2.6%. However, the rebound is “set to be short-lived, the IEA underlined “with coal use forecast to flatten out by 2025 at around 7.4 billion tonnes.

“This would make 2013, when global coal demand reached 8 billion tonnes, coal's all-time peak,” Sadamori noted. But while coal's share in both the electricity mix and the overall energy mix are in steady decline, coal use in absolute terms is not set for a rapid decline in the immediate future.

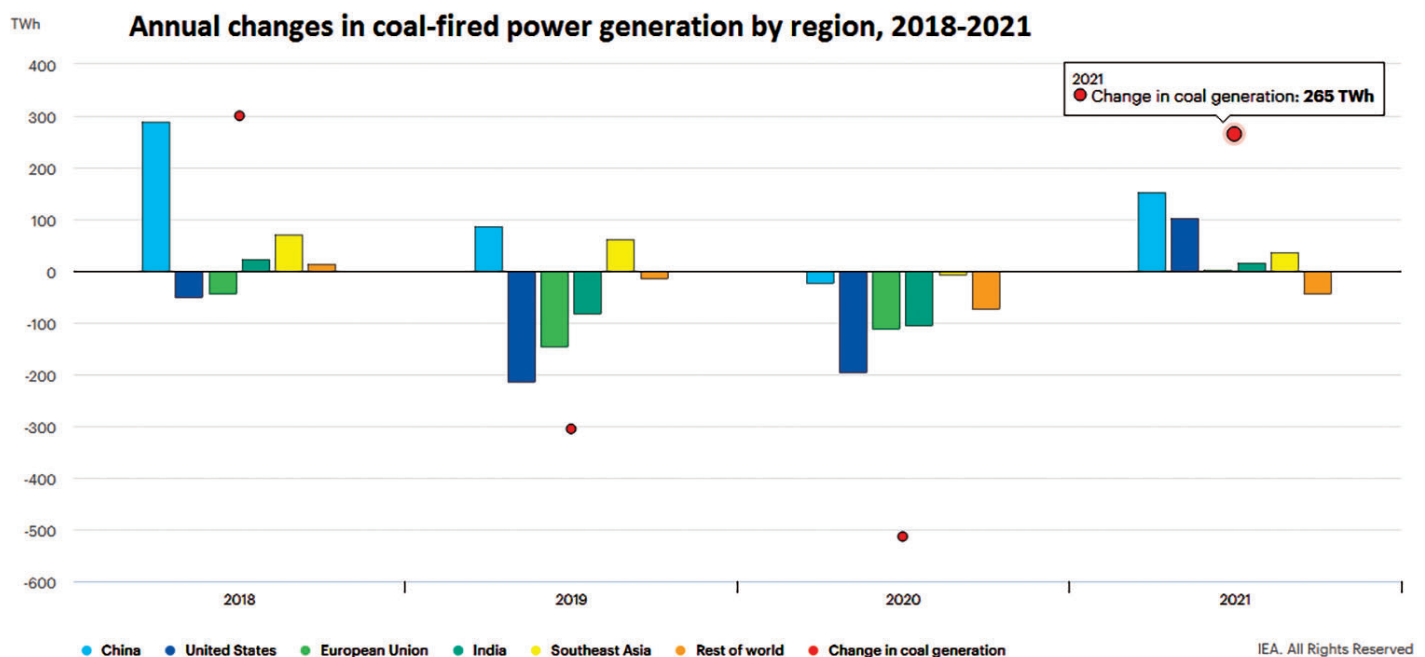
The future of coal will largely be decided in Asia. China and India together make up 65% of global coal demand, and with Japan, Korea, Taiwan and Southeast Asia included, that share rises to 75%. Any efforts

by China to reduce coal consumption will be “especially influential” for policy makers in the region.

Renewables take over

The European Union, in contrast, has dedicated €750 million for a green recovery fund in an effort to stage a sustainable economic rebound from the coronavirus pandemic. Hundreds of projects could benefit, from wind parks in northern Europe, to low-carbon steel production in Sweden to and electric vehicle battery factory in Poland.

“Renewables are on track to surpass coal as the largest source of electricity in the world by 2025. And by that time, natural gas will likely have taken over coal as the second largest source of primary energy after oil,” said Sadamori. But with coal demand still going strong in some Asian economies, use of the dirty fuel will not fade away quickly. ■



Costa Rican textile producer relies on MTU batteries plus solar PV

Costa Rica's textile firm Proquinal is producing climate-friendly with a hybrid solar and battery storage system at its San Jose site. The system contains MTU batteries with a storage capacity of 4,275 kWh and an output of 1,500 kVA as well as photovoltaic panels with 255 kWp capacity.

The 690 photovoltaic panels have been installed by solar provider Swissol and are connected to Rolls-Royce's MTU battery

containers to support the system. By generating green electricity, they prevent the emission of more than 285 tons of CO₂ per year compared Proquinal's previous use of thermal energy.

Using off-peak energy

The MTU EnergyPacks are mainly charged from the grid at night, during favourable electricity tariff periods, and in the after-

noon. The stored electricity is then used for Proquinal's textile production process during the two peak periods in the morning and evening, when power costs are highest.

Since electricity is 4.5 times more expensive during peak hours than the nighttime rate, the hybrid solar plus storage system will help the company save about \$41,000 per month – resulting in a pay-back of the investment over 4.3 years. ■

N. German state vows to set up foundation to complete Nord Stream-2

Striving to get Nord Stream 2 finalised, Germany's north-eastern state of Mecklenburg-Western Pomerania plans to carry out a bulk purchase of construction materials and machinery. These would be made available to companies involved in the project, in an effort to circumvent US sanctions.

The construction materials will be bought by a state-owned foundation, allowing Mecklenburg-Western Pomerania to fund works without getting directly involved and shielding construction companies against the threat of sanctions from the outgoing Trump administration. To justify its zeal to finalise the controversial pipeline, the MeckPom state government singled out the Russian-German interconnector as a "special contribution to energy security" and natural gas a "bridging technology" towards a green energy future.

Around 160 km of the second leg of Nord Stream-2, mostly in Danish waters, still needs to be completed. Construction was halted in December 2019 after the US enacted a sanctions bill targeting companies working on the pipeline like the Swiss-Dutch company Allseas, but Gazprom vowed to resume works in mid-January 2021. Following new sanction measures by the US Congress, analysts at S&P Global Platts pushed back its start-up assumption for the pipeline to the third quarter of 2021.

Uncertainty about Biden's stance

Analysts anticipate key energy policy disputes between the US and Germany are unlikely to disappear also under a Biden administration, though the incoming President has not yet made his position clear about the controversial Russian-German gas interconnector.

The disputed Nord Stream 2 pipeline that runs between Germany and Russia through the Baltic Sea, for example, has been a favourite target of the Trump administration – but the sanctions imposed on it were also backed by the Democratic congress.

Similarly, US pressure to increase its footprint on European gas markets through an import terminal for shipped LNG in Germany, is also likely to persist also once the new Biden administration takes over.

Germany "not a hurry" to import US LNG

Start-up of the second Nord Stream leg would increase the pipeline's overall transport capacity to nearly 99 bcm per year which is bound to greatly reduce Germany's need for LNG imports.

Low prices for pipeline gas imports have rendered the economics of building a German LNG import plant less attractive. The Government's maritime coordinator, Norbert Brackmann, said companies are moving forward with their investments, though "not in the greatest hurry."

Still, RWE remains bullish on the Brunsbüttel LNG project on the Elbe River and works towards financial close before June 2021, while Uniper has been forced to re-evaluate its Wilhelmshaven project in the absence of binding bookings.

Stade LNG, the largest rival in scale and scope, has just launched an open season for non-binding import capacity before the

binding phase for the 12 Bcm per year project set to follow in the first quarter with a view to start commercial operations in 2025. Provided some of the nine potential offtakers will sign firm bookings when HEH invites binding bids for regas capacity at Stade LNG around March 2021, the developer could swiftly take a financial investment decision. ■

NEWS NUDGES

NFE secures LNG for Puerto Rico, Mexico and Nicaragua

New Fortress Energy (NFE) has agreed to purchase Henry-Hub-indexed LNG for its integrated gas and power businesses in Puerto Rico, Mexico and Nicaragua. The New York-based project developer said it now has covered 80% of its expected needs throughout Latin America, thus reducing its need for spot purchases and its exposure to changes in the market price for LNG.

China and Korea mandate coal-to-gas switch

The Chinese government has launched a coal-to-gas boiler switching programme, targeting 7.1 million homes, which makes gas demand more weather-sensitive this winter. Similarly, South Korea mandated the closure of 15 coal-fired plants since the start of December in an effort to reduce air pollution. Analysts expect this will accelerate the drawdown of LNG terminal inventories going into Q1-2021.

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.



Pipe-laying vessel for Nord Stream 2

SK Group pours \$1.5 billion into Plug Power's hydrogen fuel cell tech

South Korea's conglomerate SK Group has decided to invest \$1.5 billion in the hydrogen fuel cell provider Plug Power as the two South Korean companies enter a strategic partnership. The aim is to provide full cells, hydrogen fueling stations, and electrolyzers to the Korean and broader Asian markets.

Plug Power has set up hydrogen business in North America which makes it an attractive partner for SK Group to venture into the high-priced US market. The company's technology powers electric motors and with

hydrogen and has deployed over 40,000 fuel cell systems for e-mobility.

Andy Marsh, CEO for Plug Power said the current relationship with SK Group is intended to result in a formal joint venture by 2022.

and the deal is expected to close in the first quarter of 2021.

SK Group turns to green energy

The conglomerate SK Group has a strong foothold in the Asian energy industry and is keen to jump on the green energy bandwagon, particularly as the Korean government seeks to transform the country into a hydrogen economy.

The government's 'Hydrogen Economy Roadmap through 2040' targets for Korean companies to produce over 5 million tons of hydrogen per year, over 6 million fuel cell electric vehicles, 1,200 refilling stations and 15 GW of fuel cell power generation. Ultimately, the economic value of Korea's hydrogen economy is estimated to reach about \$40 billion by 2040.



Plug Power's manufacturing plant in Latham, New York.

Under the terms of the investment, a US subsidiary of SK Group will acquire approximately 51.4 million shares of common stock at a price of \$29.2893 per share. The investment represents an 9.9% pro forma ownership stake in Plug Power

Siemens Energy and Gamesa to produce hydrogen from offshore wind

Offshore wind will be harvested at an industrial scale to produce green hydrogen under a €120 million development by Siemens Energy and Gamesa. The companies intend to provide a full-scale offshore demo solution by 2025/26, supporting the Germany government's goal to decarbonise transport and heavy industry.

The cooperation stipulates that Siemens Gamesa will invest €80 million over five years to adapt its G14-222 DD offshore wind turbine to integrate an electrolysis system. Siemens Energy will spend another €40 million as it contributes its expertise in electrolyzers. The novel technology is meant to reduce electric losses to a minimum, while a modular approach ensures an operational set-up for a scalable offshore wind-hydrogen solution.

Electrolysers at wind tower base

Green hydrogen will be produced through an electrolyser array, located at the base of the offshore wind turbine tower. The solution will lower the cost of hydrogen by being able to run off grid, opening up more and better wind sites.

The German and Spanish manufacturers have more than 30 years experience in the offshore wind technology as well as electrolyzers. "Our wind turbines play a huge role in the decarbonisation of the global energy system, and the potential of wind to hydrogen means that we can do this for

hard-to-abate industries too," said Andreas Nauen, Siemens Gamesa CEO.

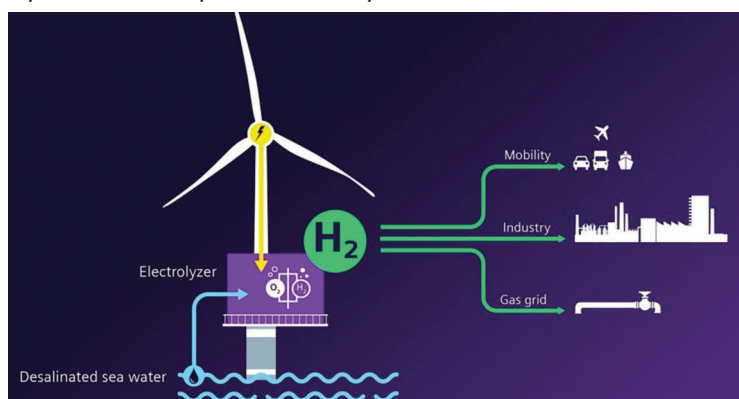
Regions with abundant offshore wind are meant to be made "accessible for the hydrogen economy," said Christian Bruch, Siemens Energy CEO. The wind-to-hydrogen technology will enable operators to store and transport wind energy, thus reducing the carbon footprint of wider economy.

Shifting from grey to green hydrogen

Some 80 million tons of hydrogen are currently produced each year and the output is seen rise by about 20 million tons by 2030. However, just 1% of that hydrogen is generated from green energy sources. The bulk is obtained from natural gas and coal, emitting 830 million tons of CO₂

per year - more than Germany's entire carbon footprint.

Replacing the use of grey hydrogen from fossil fuel sources would require 820 GW of wind generating capacity, 26% more than the current global installed wind capacity. By 2050, hydrogen production is forecast to grow toward 500 million tons with a significant share of green hydrogen. This growth would require between 1,000 GW and 4,000 GW of renewable capacity by 2050 to meet electricity demand, which highlights the vast potential of offshore wind-to-power electrolyzers.



Entergy starts up 993 MW Montgomery County Power Station in Texas

McDermott, an integrated EPC contractor, has announced the commissioning and operational start of the Montgomery County Power Station. The Entergy-owned 993 MW combined-cycle plant in Willis, Texas, is driven by Mitsubishi gas turbines and a Toshiba steam turbine.

Commercial start of the Montgomery County CCGT is modernising Energy Texas' overall power generation fleet. Use of efficient combined-cycle technology is expected to generate fuel savings of approximately \$1.7 billion over the next 30 years, and emit on average about 40 percent less carbon dioxide than Entergy's older natural gas-powered units.

Sallie Rainer, president and CEO of Entergy Texa said "the plant will not only meet our customers' needs today by improving reliability and resulting in substantial customer savings, but it also prepares our region for future growth."

Gas turbines from Mitsubishi

Mitsubishi gas turbines are powering the Montgomery County CCGT, alongside a Nooter Eriksen heat recovery boilers and a Toshiba steam turbine. Once fully ramped up, the flexible plant will provide electricity to more than 461,000 customers in 27 counties in the southeast Texas region.

The CCGT has been build next to the existing Lewis Creek Power Plant in Willis,



Montgomery County Power Station in Willis, Texas

some 46 miles north of Houston. Construction alone has generated an estimated \$1 billion in economic activity across Texas and created a multiplier effect of more than 7,000 jobs.

Construction on the facility in Willis began in 2018, and the plant officially reached commercial operation well ahead of its originally scheduled completion date, according to Entergy Texas. The 2x1 combined-cycle power station was initially intended to start up in mid-2021.

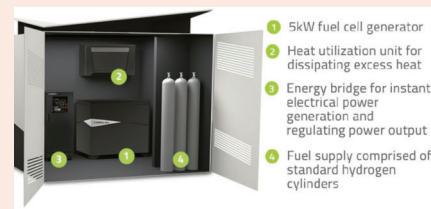
The Montgomery plant is Entergy's third combined cycle gas turbine plant to open in the past two years. Lake Charles Power Station started commercial operation in Louisiana 2020, as well as the J. Wayne Leonard CCGT near New Orleans.

GenCell wins tender to install backup substation for Mexico's CFE

Israel-based GenCell has won a tender to deploy its hydrogen-based DC backup solutions for substations built on behalf of the Comisión Federal de Electricidad (CFE), Mexico's state-owned utility. The \$6 million contract covers delivery and two years maintenance of the 37 fuel cells.

The tender gives CFE the right to buy up to 74 fuel cell units under the same terms of the initial tender, which could increase the contract volume to up to \$12 million. Delivery and deployment of the equipment is scheduled to take place in the first half of 2021.

CFE, one of the largest utilities worldwide, supplies electricity to nearly 99% of the Mexican population along with telecommunication and internet services. The CFE Business Plan 2021-25 focuses on decarbonisation, e.g. through hydrogen, and decentralized power generation.



GenCell G5rx backup power solution

Wärtsilä helps Danish utility transform biogas into biomethane

Danish utility Nature Energy has ordered two biogas upgrading plants from Wärtsilä, each capable to turn over 40 million cubic meters of biogas into biomethane. The plants are scheduled to start injecting green methane into the local gas grid by 2022.

Biomethane – the end product of upgraded biogas – can be injected in the regular gas grid, supporting Denmark's ambition to become one of Europe's first climate-neutral and fossil free nations. Today, biogas accounts for about 20% of Denmark's gas consumption, and the aim is for the natural gas grid to become "totally green" by 2035.

The biogas upgrading plants are based on Wärtsilä's Puregas CA tech-

nology, an amine scrubber process with low operating costs. The two units, to be built in the towns of Kvaers and Kong, will together deliver some 470 GWh of green gas energy, enough to fuel more than 45,000 cars. The biogas upgrading plants will run with Wärtsilä's Puregas process which recovers over 99.9% of the available methane contained in raw biogas. The remaining digestate can be sold as bio-fertiliser.



Biogas upgrading and liquefaction unit at Skogen LNG terminal

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