



Sumitomo takes steps to source hydrogen from Australia and Oman

The Japanese manufacturer Sumitomo has signed a FEED contract with JSC Group to produce solar-powered green hydrogen in Gladstone, Australia. At the same time, Sumitomo also wants to source grey hydrogen from Oman, in a move that fosters competition among suppliers to Japan's future hydrogen economy.

Gladstone is home to two ambitious hydrogen projects – one Gigawatt-scale green hydrogen and ammonia project and a gas injection facility to blend green hydrogen into the city's natural gas network.

Sumitomo and JSC's proposed solar-powered electrolyser, meanwhile, is initially meant to produce 250-300 tonnes of hydrogen annually and can be scaled up at a later stage. Analysts say Sumitomo is turning to green fuels after it made a million Dollar loss on its Bluewater coal-fired power station in Western Australian.

JSC Group said in a statement it "is making extensive efforts to



The world's first liquid H₂ carrier, Kawasaki-made 'Suiso Frontier'

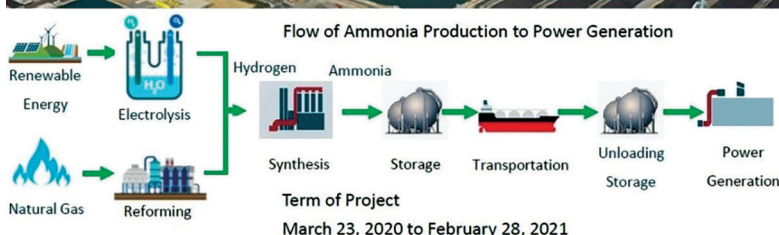
expand the use of hydrogen energy which does not emit CO₂, when burned, as well as ammonia, which is expected to be one of the most promising hydrogen energy carriers in hydrogen transportation, where there are issues from an economic and safety perspective."

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JERA and Petronas set up supply chains for ammonia and hydrogen

Japanese utility JERA and the Malaysian oil company Petronas have agreed to cooperate in establishing supply chains for ammonia and hydrogen fuels. Petronas has sold LNG to Japan for nearly 40 years and is one of Asia's leading ammonia producers – now it seeks to produce green ammonia and hydrogen as well.

The cooperation targets LNG utility buyers which are aspiring to reduce their carbon footprint. JERA vice president Yukio Kani said there are many businesses in the LNG and decarbonisation sectors in which the two companies can collaborate. "Strengthening our cooperation with Petronas will not only expand business opportunities for both companies but also contribute to the stable supply of energy globally and the transition to a decarbonised society," he said.



The cooperation with Petronas supports JERA's efforts to achieve its net-zero CO₂

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At the same time, the company is also working on producing produce hydrogen from synthetic gas made from waste plastics.

In the Australian state of Victoria, Sumitomo is already engaged in project to refine hydrogen from lignite for use as a transportation fuel. During the pilot phase of the project, Sumitomo has been working with Kawasaki Heavy Industries, the Japanese utility J-Power, Iwatani and Marubeni as well as with the Australian power producer AGL Energy.

Grey hydrogen project in Oman

On the same day the Gladstone FEED contract was signed, Sumitomo also announced the start of a feasibility study on a grey-green hydrogen hybrid project in Oman. The venture will be realised together with the Omani upstream company ARA Petroleum, using natural gas to produce grey hydrogen.

Commercial operation is scheduled to start in 2023, with the plan of producing 300-400 tonnes of grey hydrogen annually.

The project's hybrid nature comes from an additional 20 MW solar installation on the site, so that part of the hydrogen is produced from a carbon-free power source.

Analysts expect that for now, grey hydrogen will continue to be easier and cheaper to produce than green hydrogen but that will likely last only a few years. Eventually, solar and wind power will be so cheap that they will out-compete fossil fuels, making green hydrogen the preferred option. ■

Power lines for trucks could save 20% of German transport emissions

Installing a 3,200-kilometre network of overhead power lines for hybrid trucks would help Germany cut its road freight emissions by a fifth each year. Researchers reckon it would cost about €7 billion to add such overhead power lines on the busiest parts of Germany's autobahn, though the system could gradually become financially self-sustaining.

“Our calculations show that after about 10 to 15 years the system could be financed by the operating costs saved by the users,” said Julius Jöhrens, a researcher at the Institute for Energy and Environmental Research (ifeu). In this scenario, a truck which can be connected to overhead power lines will emit half as much CO₂ by 2030 as a truck running on diesel, with emissions from the vehicle production, infrastructure and power generation included.

Test track for e-trucks

The first autobahn test track for e-truck was opened in May 2020. The five kilometre long autobahn section between Frankfurt and Darmstadt in the state of Hesse is open for hybrid trucks until 2022. These special run on hybrid electric and diesel engines as well as batteries that can be quickly recharged

via the overhead lines.

“The e-highway in Hesse is a milestone for the decarbonisation of road freight transport in Germany,” said Roland Edel, chief technology officer (CTO) at Siemens Mobility, which is involved in the project. The German environmental ministry is working to open two more test tracks.

Trucks are the backbone of Germany's export-driven economy and the growing road traffic is putting pressure on policy makers to reach the sector's emissions reductions targets. Over 96% of CO₂ emissions in Ger-

many's transport sector usually gets caused by traffic, and long-distance hauling has increased over the course of the coronavirus pandemic as demand for home-deliveries grows. ■



View of the so-called 'Hessen mobile' highway

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Gas to Power Journal

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emission target by 2050. The Japanese utility is investing to expand its renewable energy portfolio and in developing low-carbon technologies for thermal power generation. Hydrogen and ammonia produce no emissions when burnt, and JERA is in talks with several oil and gas producers to establish supply chains for these fuels.

Trial-runs for ammonia co-firing

A series of trials for direct usage of ammonia as a fuel is underway in JERA's thermal power plants. The study is lead by Marubeni and has been running from March 2020 until

the end of February 2021.

In the context of the feasibility study, researchers from Marubeni and IHI Corp are scrutinising the economics of equipment cost, operational expenses as well as the cost for producing and transporting ammonia to the power stations.

If proven technically viable and economic, JERA pledged it will free up investment to retrofit several of its existing power plants with the novel ammonia co-firing technology. Australia-based Woodside Energy is also participating in the study, and could emerge as a major supplier of the clean fuel. ■

E-vehicle sales defy pandemic, exceed IEA's expectations in 2020

Global sales of electric cars in 2020 exceeded expectations by the International Energy Agency (IEA). Though the pandemic caused an unprecedented fall in sales of petrol-based cars, purchases of e-vehicles increased to over 3 million and reached a market share of over 4% – not least due to favourable policies and subsidies.

The rebound in e-car sales is equivalent to a rise of over 40% globally from the 2.1 million electric cars sold in 2019, and marks a return to the double-digit growth rates observed in the period 2010-2018, IEA figures show. In contrast, sales of traditional petrol- and diesel-fuelled cars contracted in 2020 by an estimated 14% year-on-year, as lockdown measures paralysed manufacturing facilities and supply chains on the one hand, and consumer demand.

Purchase subsidies

The lockdown affected electric car sales, but stimulus measures made this market more resilient. In Germany the government granted purchase subsidies of €9,000 for each first-time buyer of an e-car between June 2020 until the end of 2021, and the VAT rate on e-car sales had been reduced 19% to 16% until the end of 2020. In France, the so-called 'cash-for-clunker' scheme was increased for first 200,000 vehicles to €5,000 for the purchase of an electric vehicle, and to €3,000 for other cars.

Moreover, the fall in battery costs and equipment improvements in both model and choice performance helped drive buyers' enthusiasm, though analysts noted that most e-cars were bought by affluent households less affected by the economic downturn.

A year of two halves

Over the first half of 2020, global electric car sales fell 15% year-on-year with the notable exception Europe, where sales increased 55% on the back of subsidies for buyers and policy support for manufactures. Matters improved when lockdowns were lifted over the summer, and the automotive market started to recover. For electric cars, monthly sales surpassed those between July and December in 2019 in every month in all large markets including China, the European Union, India, Korea, the United Kingdom and the United States, despite second waves of the pandemic.

Looking at the entire year, electric car sales in Europe more than doubled and many large markets such as France, Italy, Germany and the United Kingdom actually had significantly higher electric car sales than in 2019 throughout almost each month of 2020. In China, electric car sales were 12% higher year-on-year. Both in Europe and China, electric car sales reached about 1.3 million in 2020, which translates into a share of electric cars in total sales of about 10% in 2020 in Europe, and 5% in China.

In the United States, despite a lack of EV stimulus measures at the federal level, electric car sales were 4% higher than in 2019 in a car market that shrank by 15%. Ac-

cording to IEA analysts, "this suggests that car buyers have a continued attraction to electric cars. In Canada, too, electric car sales dropped less than the overall market. Japan and Australia are the only major markets where electric car sales dropped more than overall car sales in 2020."

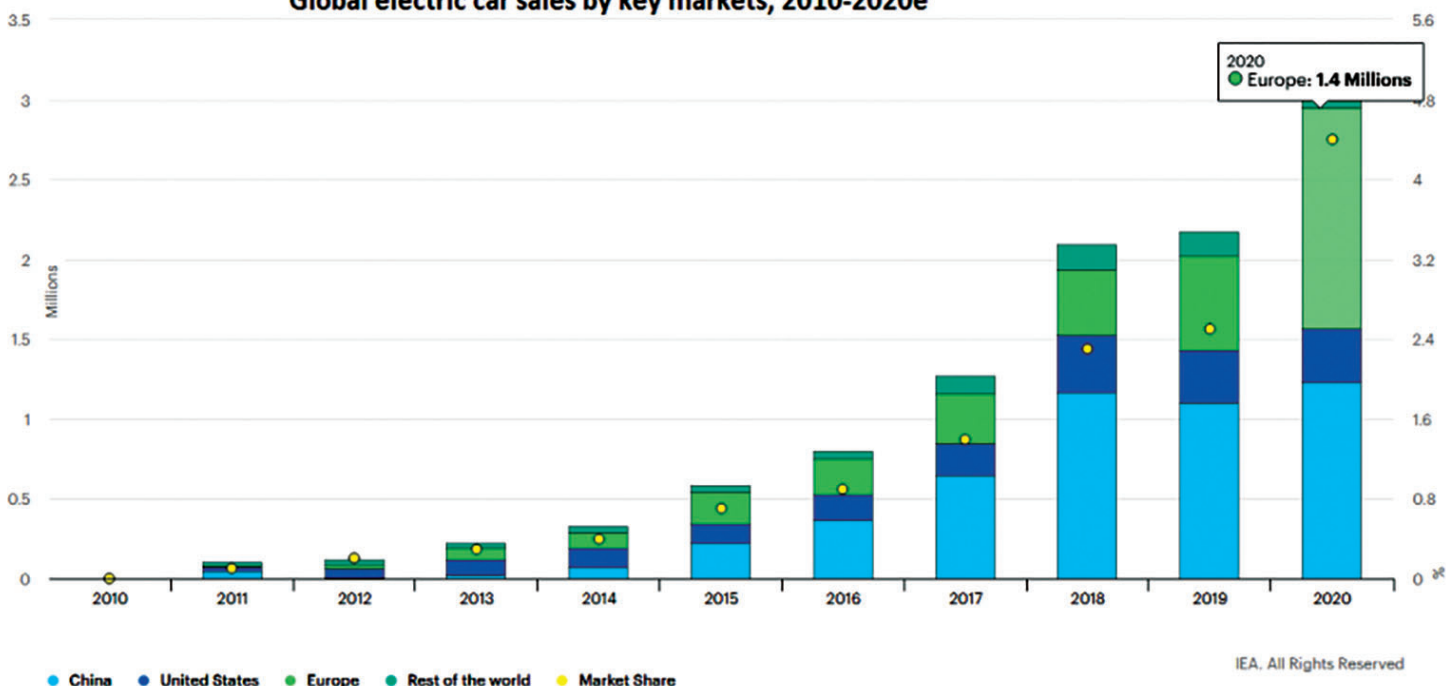
Policies turn against petrol cars

Going ahead, the IEA pointed out the share of electric cars in global car sales must climb to around 50% by 2030 to be aligned with a pathway to net-zero emissions by 2050. Several countries have already announced the full phase-out of internal combustion vehicles over the next 10-30 years.

Sales are likely to grow in Japan and Korea, which are introducing significantly higher EV subsidies than in the past. China will continue navigating the gradual phase-out of its NEV subsidy programme (full phase-out was postponed from 2020 to 2022) and the progressive tightening of its NEV credit attribution system and NEV credit mandate targets.

In the US, there are signs that the new US administration of President Joe Biden could prioritise fuel economy standards, promote charging station deployment, provide tax credits and help factories making internal combustion engine cars retool to make electric vehicles. ■

Global electric car sales by key markets, 2010-2020e



Arctic blast pushes up power prices in France and Germany

A distortion of the polar vortex has caused harsh winter weather across Europe, pushing up power prices. Peakload power prices at the European Energy Exchange (EEX) intraday auction surged to €59.54 per MWh for Germany, and a record €65.39 per MWh for France.

Intraday peak power prices for the UK market last changed hands at £ 59.59 per MWh. On the OTC market, the German front-week power contract was last seen trading at €66.51 per MWh – a 24% jump on Friday's close, and cold temperatures with low wind generation levels are forecasts to continue for most of this week.

Today's jump in Germany's power prices comes after prices turned negative in the early hours of Sunday when an oversupply of wind power supply was supplied to the system. Power grid operators are struggling to handle rising volumes of intermittent energy supply as supportive policies make utilities add more and more wind and solar power installations, despite a lack of high-voltage transmission lines.

Cold weather may last until April

In late January, the polar vortex – a large low-pressure area that normally keeps cold air contained in the far north – collapsed. The jet stream became unstable as a result, sending Arctic blasts further south. Overnight today, icy cold air from Russia and Scandinavia covered much of Europe in snow and caused wide-spread disruption

to road traffic.

Some forecasters like Marlene Kretschmer, climate researcher at the University of Reading, UK, believe the polar vortex will not fully recover this winter, which would make periods of cold weather continue into spring. In extreme cases, such as in 2013, Germany can experience severe frost until April.

Pandemic kept a lid on prices

Throughout the Covid-19 pandemic, a slump in energy demand as well as lower fuel costs and, and record renewable energy supply have pushed down German power prices substantially. At €30.47 per MWh, the average 2020 wholesale price was more than €7 below in 2019, according to the Energy Economics Institute (EWI) at the University of Cologne.

Demand collapsed in April in particular, at the time of the first lockdown and did not recover until August, according to EWI figures. The current lockdown from mid-November through February 2021 has "comparatively little impact on electricity demand compared with the spring."



OTC power broker in Europe

Surge in green power supply

At the same time, Germany's green energy output reached a record of nearly 9.2 Terawatt hours (TWh). Onshore wind increased 3.5% and offshore 11.1% in output while the solar PV surged 9.3% in 2020 due to favorable weather conditions and the expansion of generation capacity.

Analysts underlined that renewable energy, produced at near-zero operational cost, clearly had a dampening effect on electricity prices, and can push prices below zero at times. This typically occurs, when extreme oversupply cannot be transmitted fast enough to centres of energy demand due to a lack of high-voltage power transmission lines that connect wind parks along the North Sea with industrial regions further south. ■

US gas demand recovers faster from the pandemic than oil and coal

Modelling how fast US energy demand will recover after the pandemic, government analysts say demand for natural gas will recover faster than other fossil fuels. Electricity use is expected to largely return to 2019 levels by 2025, causing a slight uptick in gas-burn while the contribution of coal, oil and nuclear falls behind.

All projections of the US Energy Information Administration (EIA) are, however, highly dependent on the pace of U.S. economic recovery. In a case that assumes low economic growth, energy consumption does not return to 2019 levels until 2050. In most cases, EIA projects that energy-related CO2

emissions will decrease through 2035 and then increase.

Stephen Nalley, the EIA's acting administrator said it will take years the energy sector to get to its new 'normal'. "The pandemic triggered a historic energy demand shock that led to lower greenhouse gas emissions, decreases in energy production, and some-

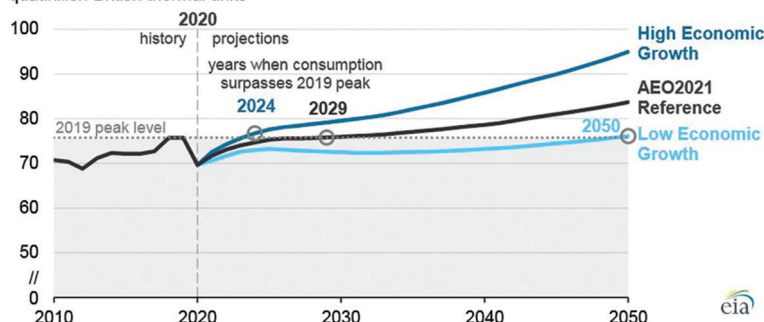
times volatile commodity prices in 2020," he said, cautioning the pace of economic recovery, advances in technology, changes in trade flows, and energy incentives will largely determine future energy produc-

Power mix shifts to gas and renewables

Electricity demand has already started to recover as lockdowns are lifted, but the share of power generation sources has changed. Wind and solar power technologies are projected to account for almost 60% of the capacity additions from 2020 to 2050, the renewables' share is forecast to more than double by 2050.

The contribution of natural gas will rise slightly to 36%, while the coal and nuclear shares will both fall by about half, according to baseline projections in Annual Energy Outlook 2021. The AEO2021 Reference Case looks at a future in which slower growth in consumption in an increasingly energy-efficient US economy contrasts with rising supply due to technological progress in renewable sources, oil, and natural gas. ■

U.S. delivered energy across end-use sectors (2010–2050)
quadrillion British thermal units



Source: U.S. Energy Information Administration, Annual Energy Outlook 2021 (AEO2021)



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Electrolysers to curb carbon footprint of BASF's Ludwigshafen site

Germany's chemical company BASF and Siemens Energy want to accelerate the industrial use of low-carbon technologies. In talks are several projects at BASF's Ludwigshafen site, e.g. adding a proton exchange membrane electrolyser (50 MW) to produce hydrogen and a heat pump (50 MW) to generate process steam from waste heat.

In addition, Siemens Energy will help modernise the power grid at the Ludwigshafen site using digital and CO₂-optimized products. A study is underway to assess the potential for common system and catalytic converter development to boost the efficiency of PEM (proton exchange membrane) electrolysis when generating electricity from wind energy.

BASF and Siemens Energy said they "strive to study the pilot projects identified for technical and commercial feasibility as soon as possible in order to be able to reliably quantify the investments needed."

"At BASF, we want to develop and implement new low-CO₂ technologies as quickly as

possible. If we want to use such technologies on a large scale, we will need appropriate regulatory framework conditions and targeted support. We need renewable electricity in large quantities for this, and we need it at competitive prices," said the company's board chairman, Dr. Martin Brudermüller.

BASF has sought to curb greenhouse gas emissions since 2018, and has set a target that until 2030, the absolute level of BASF's emissions should not 2018-levels. With the company's planned rise in chemical production, this requires a reduction of the company's emission intensity by around 30%



BASF's chemical production site at Ludwigshafen, Germany

over this period.

Beyond 2030, BASF also aims to further reduce its emissions in absolute terms which will make the company more reliant on electricity from renewable sources as well as green hydrogen. ■

Siemens Energy and Air Liquide to develop large-scale PEM electrolyser

A Franco-German cooperation on hydrogen technology has been set up by Siemens Energy and Air Liquide. The two companies will combine their expertise in Proton Exchange Membrane (PEM) technology to develop an industrial-scale electrolyser which will be piloted at the Air Liquide-H2V Normandy project (200 MW) in France.

Hydrogen will play an essential role to achieve the European Union's objectives for CO₂ and greenhouse gas emission reduction. Hydrogen can be produced sustainably and at a lower cost through large-scale PEM electrolysers.

"Now, is the time to invest massively in order to develop new value chains and new technologies. Now, is the time to act. With "France Relance", 7 billion Euros will be invested in hydrogen between now and 2030 to make our economy more competitive and more decarbonised," said Bruno Le Maire, French Minister of Economy, Finance and Recovery

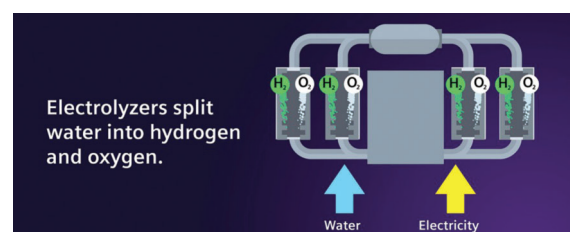
The project of Air Liquide and Siemens Energy, in his view, is "only the beginning of

an industrial cooperation that must develop beyond a Franco-German alliance. The recovery must be above all a European recovery," he stressed.

Funding under IPCEI scheme

In the framework of their cooperation, Siemens Energy and Air Liquide will jointly apply for large projects funding under the EU's Green Deal and Important Project of Common European Interest (IPCEI)-scheme for hydrogen. This funding is required to fast start sustainable and meet the challenging timeline set out by the EU Hydrogen Strategy as well as the French and German national green energy targets.

Siemens Energy CEO Christian Bruch welcomed the creative technology partnership with Air Liquide, suggesting: "Collectively we will overcome the challenges that lie ahead to industrialize the technology and make sustainably generated hydrogen a success story. ■



NEWS NUDGES

NTE to develop 5 GW clean energy projects

Florida-based NTE Energy is working with investment partners to develop 1.2 GW of solar and 3.9 GW of battery energy storage systems (BESS) next to thermal power plants. "By co-locating renewable projects with thermal generation, we can offer customers access to affordable solar power options backed up by reliable natural gas," said Steve Remen, NTE managing director. The company aims to bring 4 GW of its proposed clean energy projects into commercial operation by 2026.

Enagás to tap wind power for hydrogen

The Spanish utilities Enagás and Naturgy are evaluating the potential of producing hydrogen from a 250 MW floating off-shore wind farm and a 100 MW on-shore wind farm in Asturias. The project is hoped to generate more than 1500 jobs during construction and operation, with developers applying for funding under the IPCEI scheme.

Turboden wins contract in the Philippines

Italy-based Turboden, part of Mitsubishi Heavy Industries, has been awarded a contract by the Philippine utility EDC to supply a 20 MW geothermal power plant at Bacon-Manito, on the island of Luzon. The zero-emissions power unit is scheduled to start operations before the end of 2022, and will help lower the local grid's dependence on fossil energy source. ■

Energy World Corp gets SSLNG and power venture back on track

Australia-listed Energy World Corp has received a favourable ruling from the Indonesian regulator that reverses a zoning error, allowing EWC to proceed with its Sengkang LNG plant in South Sulawesi and an adjacent 315 MW power project. The site had been classified as 'forestry land' but is now 'industrial land'.

The Indonesian forestry ministry carried out a review of the historical land documentation and a remapping of the land area, which was incorrectly claimed to be forestry land in June 2017, the directors of EWC said in a filing to the Australian Securities Exchange.

Project resumes after 4-year delay

"SSLNG have now been advised that the land upon which we have constructed the mid-scale modular LNG facility has been re-confirmed by all the relevant authorities as industrial land and after a four-year delay, said EWC executive director Brian Allen.

The Australian developer can now forge ahead and build the project, and is actively engaging in commercial discussions on project financing and LNG offtake from the plant. Mr Allen stressed the ruling showed EWC "properly purchased industrial land" and will the LNG production plant as well as the gas-fired power station on industrial land.

EWC has already been granted a 20-year extension to its Indonesian natural gas production-sharing contract in South Sulawesi. With the land matter issue resolved, EWC can now fully develop the commercial opportunities previously foreseen.

The Sengkang power plant is being developed in phase, starting with a 85 MW open-cycle unit that will be expanded to a 135 MW combined-cycle unit which would cover half of South Sulawesi's current elec-

tricity demand. The availability of a clean power source will support the economic development of the island and allow local utilities to rely less on HFO-fuelled power units.

LNG hub at Pagbilao progresses

Mr Allen expanded that EWE is in the process of developing an LNG hub in the Philippines that includes several gas-fired power projects. The company's LNG import in Pagbilao, Quezon Province, is nearly completed. The terminal will be run on a tolling model for third-party clients, and also support a 650 MW gas-fired power project under construction next to the LNG terminal.

The LNG hub in Pagbilao, the first to be constructed in the Philippines, will have two storage tanks and total capacity of 260,000 cubic metres, supplying the affiliated gas-fired power plant. If built as planned the regasification plant will be able to process 3 million metric tons of LNG per annum, which is sufficient to generate up to 3,000 MW of gas-fired power.

The power plant is being developed in three stages. Block 1 has begun operations and observers say the venture is 90% complete. Allowing for a staggered start-up, EWC can commission the first 200-MW unit of its gas-fired power station in six months after the drawdown of funds from the company's policy bank lenders—the Development Bank of the Philippines (DBP) Landbank of the Philippines (LandBank) and Asia United Bank (AUB)—with 400 MW and 650 MW thereafter at three-month intervals.

The ambitious project has cost EWC an estimated \$750 million and has created over 800 direct jobs in the Philippines during the construction period. Of this total, the Australian company invested approximately \$600 million in equity and the remaining \$150 million is funded by Philippine banks. ■

PG&E deploy risk modelling technology to reduce wildfire risk

Pacific Gas and Electric Company (PG&E) plans to spend \$3 billion each year in 2021 and 2022 to better mitigate wildfires. In a proposal filed to CPUC, the California energy regulator, PG&E said it will deploy weather stations and cameras throughout its service area to pre-empt risks.

In recent years, wildfires have caused havoc across wide parts of California each summer. On one occasion, a large fire was known to be caused by PG&E overland transmission lines. The utility had to put in place precautionary black-outs for three days, disrupting the daily lives of thousands of customers.

In September 2020, PG&E had to cut electricity supply again for several days after high winds and all-time high temperatures across Southern California kept fuelling fires, affecting 3 million residents. Electricity imports from Oregon also had to be curtailed at the time to 900 MW due to the heat, while generation capacity totalling 260 MW tripped offline. Combined, these incidents caused serious supply shortages that PG&E is keen to be avoid in summer 2021.

Power imports for peak-shaving

California is importing larger and larger volumes of its electricity needs, largely for peak-shaving. Rapid renewables build-out makes California subject to rising volumes of intermittent electricity supply, hence demand spikes need to be covered by imported thermal power. Net imports last year totalled 70.8 million MWh, or 25% of the state's total power consumption.

Several utilities in California own and import power from power plants in Arizona and Utah. Electricity imports also include hydroelectric power from the Pacific Northwest, largely across high-voltage transmission lines running from Oregon to the Los Angeles area. ■



Engineering design for South Sulawesi LNG export terminal

Turboden supplies binary-cycle power equipment to the Philippines

Turboden and Mitsubishi Power will provide equipment for a 29 MW binary-cycle power generation unit to be installed at a geothermal plant in Palayan on Luzon Island in the Philippines, owned by the local utility Energy Development Corporation (EDC). The order calls for project completion by the end of 2022.

Under the contract with EDC, Turboden will add new binary cycle geothermal power equipment, whose key component is the company's proprietary 29 MW organic rankine cycle (ORC) system, to the existing 120 MW flash type geothermal power unit. The overall plant is owned and operated by Bac-Man Geothermal, a subsidiary of EDC.

ORC turbine at the heart of the plant

The key component of the plant is Turboden's ORC turbine that uses low-boiling-point organic matter, such as fluorocarbon or hydrocarbon, as the boiling medium. The system can be driven by relatively low-temperature heat sources such as factory waste

heat, biomass and geothermal energy.

The new binary-cycle power gen system will make effective use of brine, which until now has merely been returned to a reinjection well. It can generate up to 40 MW of power and is ideally suited for electrifying remote locations.

Mitsubishi Power will provide support through its local resources.

Financing for the Palayan project will be provided by the Japanese government and its Global Environment Centre Foundation under a Joint Crediting Mechanism (JCM) model. In addition to reducing emissions on Luzon Island, the project will also will contribute to Japan's attainment of its CO2 reduction target. The new 29 MW binary cycle power unit is expected to trim CO2 emissions by approximately 72,200 tons per year.

Going forward, MHI aims to broaden its offering of high-efficiency power generation and clean energy systems. The Japanese manufacturer said it will intensify its cooperation with Turboden by pushing for customers' adoption binary cycle power generation equipment on a global scale. ■



Installation of a Turboden ORC system

Wärtsilä energy storage system to help balance wind farm in Mexico

Finish technology group Wärtsilä is supplying a project-critical energy storage system to balance the output of the 50 MW Eolica Coromuel wind farm in La Paz, Mexico. The GridSolv Max system will deliver a power output of 10 MW to help ensure stable project operations and meet grid requirements.

Both the 50 MW wind farm and the 10 MW energy storage system will be connected to the local grid, operated by Mexico's independent system operator CENACE. The GridSolv Max energy storage help to significantly increase energy density and system reliability. The grid operator can control the facility's ramp rate in order to enhance generation reliability, as well as providing frequency control and capacity.

In the balancing process, Wärtsilä's GEMS interface will take instructions from the wind farm master controller. The GEMS platform connects energy assets to the markets while optimizing operations. The platform's flexible architecture adjusts the hybrid power system to supply and demand conditions, and helps manage fluctuations in output caused by changing wind conditions. ■



ECO wind farm near La Paz, Mexico

McDermott wins EPC contract for power-to-gas unit in New Jersey

McDermott's CB&I Storage Solutions unit has bagged an EPC contract from New Jersey Natural Gas for a power-to-gas facility in Howell. The plant will produce green hydrogen from solar power and feed it into the local gas network. Works are underway and due completed in late 2021.

"Green hydrogen is critical to power a carbon-free future," said Cesar Canals, Senior Vice President of CB&I Storage Solutions. "As the energy industry seeks opportunities to reduce its impact on the environment, our proven project execution model is positioned to deliver the next generation of sustainable energy infrastructure."

In January, several US upstream companies have commissioned McDermott to carry

out a study into how to best expand current liquid hydrogen storage capacity limits. The award of the study and related funding shows industry leaders recognize that "effective, affordable storage solutions are imperative to achieve a sustainably powered future," said Samik Mukherjee, who heads McDermott's New Projects unit.

"Hydrogen, like wind and solar, plays a major role in decarbonisation," he said, explaining that the study aims to unlock even greater potential in this field. ■



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