



Australia faces soaring gas prices amid global energy crunch

LNG exporters in Australia face mounting pressure as the global energy crunch pushes up domestic gas and electricity prices which burden households and local industry. Soaring gas prices and subsidised growth in the renewable electricity supply also risk undermining the economics of a fuel switch from coal to gas in Australia's power sector.

Buyers in Asia are prepared to pay record prices for importing Australian LNG to keep their economies going as they rebound from the impact of the Covid-19 pandemic. For upstream companies in Australia, this means that selling the super-chilled gas abroad is much more lucrative than using it at home.

Investors hesitant about new CCGTs

As the rise in global gas prices is likely to continue, this trend restricts investors' willingness to build new combined-cycle gas power stations in Australia. High peakload power prices do not alter this general trend because even during these periods, the more expensive gas fuel cannot compete with cheaper hydropower.

"Gas-fired generation competes most directly with hydroelectric



sources of energy during periods of high prices. While hydroelectric power is intermittent over annual timescales, it can be dispatched just as reliably as gas and often has faster ramp rates," said Bret Harper, Associate Director of Research at RepuTex, an Australian specialist energy and carbon research firm.

Side effects of a carbon tax

As for Australia's carbon tax, he warns that heap carbon credits risk eliminating any cost advantage of burning cleaner natural gas over more emission-intensive thermal coal.

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Merkel makes plea for CO2 pricing at COP2021 summit in Glasgow

German chancellor Angela Merkel has made a heart-felt plea for more widespread carbon pricing – including sectors like power generation, aviation, industry and transport – at the COP26 summit. Progress made so far in reducing emissions had been "insufficient," she said, noting Germany has just set tighter climate targets to cut emissions by 65% by 2030 from 1990-levels, and reach Net Zero by 2045.

Staying upbeat despite multiple challenges ahead, Merkel underlined at the opening of the COP 26 summit in Glasgow that world leaders had made a large number of crucial decisions already: Most recently on Sunday (31 October) at the G20 summit in Rome, when they agreed to stop international financing for coal power stations.

"Above all, we have the Paris Agreement of 2015 as our guiding marker, however, that the progress made was still insufficient," she said.

"The national greenhouse gas reduction targets (so-called 'nationally determined contributions', or NDCs) do not add up to help achieving what was agreed to in Paris."

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Chancellor Angela Merkel at her last COP as German leader.

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"The carbon tax offsets the price advantage of low cost fuels, such as brown coal, for electricity generation. The lesson to be learned from Europe is not to allow a surplus of credits to build up as a result of the mismatch between the cap on emission and the supply of credits," he explained.

Moreover, the intermittency of renewables in Australia has also not been a major problem. "The states with high renewable penetration have seen their energy costs go down. Neighbouring states are sometimes restricted by transmission constraints from importing more renewable energy and this is being addressed by adding transmission capacity to areas of Australia

where there is potential for even more new capacity," said Harper.

Replacing gas gensets with renewables

Producers and exporters of LNG in Australia strive to lower their high carbon footprint as buyers announce Net Zero targets. However, most cargoes from Down Under incur more than the world's average 0.56 ton of CO₂e per ton of LNG produced. Carbon offsets an option, as are retrofitting liquefaction plants with CCS and replacing gas gensets with renewables and batteries.

Australia strives to become a frontrunner in green LNG to not risk losing market share as its largest customers – China, Japan and

South Korea – seek to decarbonise their energy imports.

Carbon capture and storage (CCS) brings many challenges tough: Regulators must allow carbon credits to be assigned to injected CO₂. Moreover, CCS also requires a carbon price to work commercially.

Today, we are still far away from both a global carbon price and a carbon creditation system for CCS in Australia. There are also geological and technical hurdles, as evidenced by ongoing issues at the Gorgon LNG CCS project. For example, Chevron had to shoulder a 46% cost overrun for its US\$54 billion Gorgon project with the CO₂ injection project estimated to cost another US\$2 billion. ■

Europe's top banks lag behind on efforts to reach Net-Zero by 2050

Large banks in Europe are late in setting necessary targets to reach net-zero emissions by 2050 and there is an apparent lack of transparency when comes to trackable metrics, ZEB-consulting finds. Western European universal banks have been found to cause the most emissions worldwide due to their strong exposure to CO₂-intensive sectors such as transport, traffic or energy.

For its findings, the Münster-based management consultancy ZEB surveyed 50 financial institutions surveyed and most of them have neither set specific climate targets nor give any insight into the carbon footprint of their loan portfolios. Public available data is of little help to determine the emissions intensity of the banks' loan portfolios, ZEB analysts found who were trying to gauge portfolio sizes and which economic sectors are financed in the respective countries.

Commerzbank in the spotlight

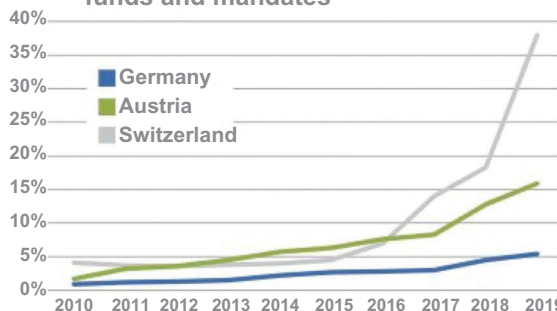
Though the report does not name any of the ranked financial institutions, it is understood to include major German banks such as Commerzbank which has been subject to intense scrutiny in recent months.

In contrast, Scandinavian institutions fare better because they benefit from the high share of renewable energies in their home regions. ZEB consulting advises banks to develop the reporting of their emissions, set concrete targets and continuously publish and review them.

"Early measurement of emissions in banks' portfolios, and concrete plans for their reduction, are the key challenges for Europe's financial institutions on their way to net zero. Previous announcements must now be followed by consistent action," said Dirk Holländer, Zeb senior partner and co-author of the study.

In May, the outgoing German govern-

Market share of sustainably managed funds and mandates



Data: Forum Nachhaltige Geldanlagen, Swiss Sustainable Finance 2020



ment had presented a 'Sustainable Finance Strategy', announcing it wants to turn the country a "global leader in greening the financial sector."

The strategy proposes a 'traffic light system' to identify green investment opportunities, and announced the reallocation of €9 billion in equities that Germany holds in pension and welfare funds into green investments. The overarching plan is to make sustainable finance the priority of Germany's G7 presidency in 2022. ■

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Aiming to implement Paris goals by 2025

Calling for unity and timely action, she said: "We can implement the Paris Agreement, and not just in the course of this century, but, as we in the G20 have said, in the middle of this 21st century."

Though industrialised nations have the greatest task at hand in cleaning up hard-to-abate sectors like heavy industry, chemical

plants and transport – these nations should also assist others to cope with the effects of global warming.

"We have to admit that we won't reach the US\$100 billion in funding until 2023 – belatedly, but at least we can do it. That is an important signal," Merkel said, promising "We are making a considerable contribution on the German side and will increase this to €6 billion by 2025." ■

Putin says flows through Nord Stream2 could start in early November

First gas flows through Nord Stream 2 will commence as soon as the Swiss operator gets the regulatory green light, expected in early November. "If the German regulator hands its clearance tomorrow, supplies of 17.5 billion cubic metres (bcm) will start the day after tomorrow," the Russian President Vladimir Putin told a televised forum.

The Baltic Sea interconnector, funded by Gazprom and its European partners, is intended to start operations around November 9, Putin was quoted as saying by German media, though the President stressed Russian gas storage needs to be filled up first.

First pipeline leg filled

The Swiss-based pipeline operator, Nord Stream-2 AG, said it had successfully filled the first leg of the Nord Stream-2 pipeline with so-called 'technical gas'. The operator stressed it is now awaiting regulatory clearance to start commercial gas sales to Europe.

About 177 million cubic metres (mmcm) of technical gas is needed to maintain pressure in the pipeline for future gas sales, and Nord Stream AG confirmed this amount has now been pumped into the pipeline, reaching a pressure of 103 bar.

"This pressure is sufficient to start gas transportation in future," the pipeline's Swiss-based operator said in a statement. Pre-commissioning steps for the second pipeline leg are ongoing. Once fully operational, Nord Stream 2 will double Russia's annual gas export capacity in the Baltic to 110 bcm.

Most analysts agree this will provide substantial relief to the current shortage of gas supply in Europe, which has been exacerbated by high global demand and limited LNG supply. The price of natural gas – both delivered via pipeline and LNG – has sky-rocked in both Europe and Asia as the winter season approaches.

First flows imminent

Once approved by the regulator, Nord Stream 2 will provide some respite to the European market by delivering up to



Map of major Russian gas export pipelines to Europe

12.5 bcm of Russian gas through the Baltic Sea to north-eastern Germany through the winter. However, the pipeline's actual start-up could come too late for the market to stabilise under cold weather dynamics, analysts warned.

Market observers had suggested Russia was "playing pipeline politics," claiming Gazprom would deliberately hold back supplies, e.g. through the Yamal-Europe pipeline through Belarus and Poland with the aim of putting pressure on European policy maker to ease regulatory restrictions on Nord Stream 2. Putin has repeatedly denied these claims.

Fact is that a cold Russian winter would mean Gazprom will only have sufficient volumes to provide additional exports via Nord Stream 2 or Ukraine (above the ship-or-pay agreement), not for both, flow data shows. Hence, the Kremlin-owned Gazprom will make sure to prioritise domestic supply and considering low storage levels in Russia and rising seasonal demand, there is a risk that the volume of gas exports to Europe will be limited to around

106 bcm through the winter 2021/22.

Risk of gas shortage

Analysts have warned that Europe faces gas shortage this winter if Gazprom won't deliver enough natural gas in due course. If Gazprom will use all its existing capacity – Nord Stream, Yamal-Europe, Turkstream and Ukraine – up to the ship-or-pay agreements, Europe still needs 58 Bcm of gas in storage to meet peak winter demand.

An exceptionally cold winter could boost Europe's heating demand by 20 Bcm and incur serious shortages, analysts said, unless more Russian gas becomes available via Nord Stream-2.

With currently only 29 bcm of gas in storage, there is a risk storage levels could drop to zero. "If this plays out, Europe would be wholly dependent on Russian flows above existing capacity," analysts warned. Still, assuming Gazprom will fully honour its ship-or-pay agreements on all key gas interconnectors to Western Europe, this would leave around 29 bcm of gas in storage by the end of March. ■

Gazprom boosts 10-months gas supply to the EU, doubles exports to Turkey

Russia's Gazprom has boosted sales to the EU by 17.2%, or 28.8 billion cubic meters (bcm) between January and October. Volumes sold to Turkey were doubled and exports to Germany increase by nearly a quarter as the Russian major seeks to out-compete LNG by offering comparatively cheap pipeline gas.

Strategic gas sales are one of the strength of the Russian state-owned gas company. Gazprom is specifically increased its gas supplies to European LNG importers

such as Italy (+15.4% more Russian gas sold), Poland (+9.5%), Greece (+16.3%) and Finland (+13.3%).

Targeted sales

Exports to several countries, notably Turkey, as well as south-eastern European member states of the EU Bulgaria and Romania, and Serbia, have already exceeded the amounts of gas delivered to these countries for all of 2020.

Exports to China through the 'Power of

Siberia' pipeline also saw a stark rise: On October 31, supplies as requested by China hit a new record and exceeded the daily contractual obligations of Gazprom by more than 19%, it said without giving details of volumes.

Striving to increase gas production for both the domestic Russian market and abroad, Gazprom specified it produced 422.6 bcm of natural gas between January and October, some 57.7 bcm or 15.8% more than during the same period last year. ■

Rolls-Royce opens new R&D test bench for mtu engines in China

Rolls-Royce business unit Power Systems is strengthening its R&D capabilities in China with a new test bench for mtu engines at its Suzhou site. The test bench can handle engines with up to 3,600 kW power output and will first be used for test runs of gensets based on mtu 16V 4000 engines, starting from 2022.

It can also be used to test wide range the Series 4000 engine, and MTU said it will use the new test bench to scrutinize the functionality of parts, engines and complete systems for power gen and industrial applications.

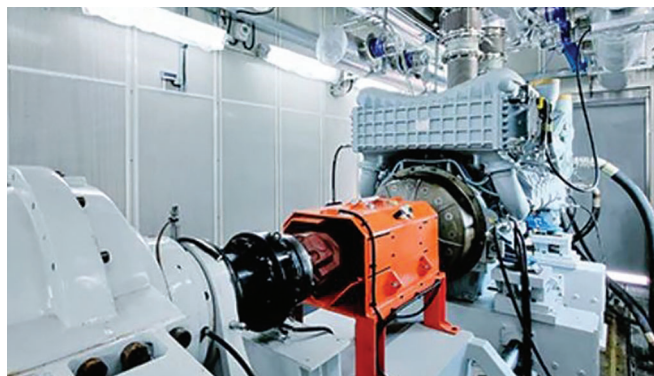
With the opening of the new test bench, Rolls-Royce Power Systems in Suzhou is now covering the whole value-chain: from sales and services to manufacturing and R&D. From mid-2022, the capabilities of the test bench will be upgraded and extended to testing mtu Series 2000 engines as well.

Helping China to decarbonise

China has been a key strategic market for Rolls-Royce Power Systems for a long time. Eugenia Valente, President Rolls-Royce Solutions Greater China said: "We remain committed to supporting the sustainable development of China's industry with our

activities in Suzhou and other locations," she added, outlining the company's aim is to "serve customers with more competitive products and optimized systems solutions (on the path towards) a low-and finally net zero carbon economy in the coming years."

Rolls-Royce Power Systems opened its first facility in Suzhou 25 years ago. The Suzhou site later became the third production base for mtu engines globally at that time, responsible for the assembly of mtu Series 2000 gendrive engines. Branches in Beijing, Shanghai and Dalian were established gradually, and in October 2021, the former MTU Engineering (Suzhou) was renamed Rolls-



View into Rolls-Royce's R&D test bench in Suzhou

Royce Solutions (Suzhou).

MTU, based in the southern German town of Friedrichshafen, has been evolved from the former Tognum company and is listed as Rolls-Royce Power Systems AG since January 2013. Annual underlying revenue was £11.76 billion in 2020 and £1.25 billion was invested in R&D. ■

JERA's quarterly revenue up 27% despite lower net income

JERA has reported a stark rise in operating revenue in the three months to September though net income retreated. Despite an impairment loss of 32.3 billion yen in the overseas power gen business, net income increased due to the world's economic rebound from the Covid-19 pandemic and rising profits from LNG sales through JERA Global Markets.

Tokyo-based JERA quantifies the impact of post-Covid economic rebound on its third quarter earnings with 29.8 billion yen, which combined with a rise in profit of its LNG sales & trading arm JERAGM (+ 48.8 billion yen) helped boost overall revenue.

Revenue jumped 27% year-on-year to 1,590.8 billion yen (\$14.04bn) in the third quarter, the company said, due to fast growing LNG sales by JERA Global Markets and rising electricity sales from its Japanese power gen assets.

As Japan's largest LNG buyer, JERA can purchase up to 35 million tonnes per annum (mtpa) of the super-chilled gas and controls

a fleet of 20 LNG carriers. The company is also Japan's largest electric power producer and is jointly owned by Tokyo Electric and Chubu Electric.

JERA's earnings statement also shows that operating revenue during the three months to September 2021 increased by 27 percent year-on-year to 1,590.8 billion yen (\$14.04bn) from 1,252.5 billion yen (\$11.00bn) in the prior-year period.

Fuel cost adjustment

However, quarterly net income attributable to JERA fell by about 60% year-on-year to 43.8 billion yen (\$384.7m), down from 108.9 billion yen (\$956.5m) year-on-year, the company said blaming the losses on a "fuel cost adjustment system time lag."

Japan's fuel cost adjustment system is designed to automatically adjust monthly electricity fees based on falls or increases in actual recorded fuel prices for

LNG, crude oil and coal.

"Net Income excluding the impact of the fuel cost adjustment system time lag was 134.8 billion yen (\$1.18bn)," JERA said, explaining: "The net income decreased due to the shift from gains to losses of time lag, down 203.7 billion yen, despite a substantial increase in net income excluding the effect of time lag (+138.7 bn yen)."

Net Income in the quarter, when excluding the impact of the fuel-cost adjustment system time lag, is 150 billion yen (\$1.3 bn), it added.

Rise in power gen

Electric power generated by LNG during the quarter amounted to 46.8 terawatt hours (TWh), compared with 14.9 TWh of power from coal, versus 12.2 TWh from coal in the previous quarter. The fiscal second-quarter proportions were 76% gas-fired power from regasified LNG and 24 percent coal-fired power, according to official figures.

JERA currently operates and provides fuel for 26 power plants in Japan and imports LNG into 11 of Japan's network of 37 terminals. ■



JERA's Yokkaichi LNG import terminal and power station

Equinor awards pre-FEED contracts for H2H Saltend hydrogen plant

Pre-FEED (Front End Engineering and Design) study contracts have been awarded by Equinor for the H2H Saltend hydrogen production plant (600 MW) in the UK. The study also underpins plans to scale up the Saltend plant for another 1,200 MW hydrogen for use at Keadby power station – the world's first 100% hydrogen-fuelled generator.

The pre-FEED study will also support the plans to scale up the plant to a further 1,200 MW of hydrogen production. This expansion project brings combined hydrogen production capacity of 1,800 MW – about a third of the UK Government's 5 GW production goal for low carbon hydrogen.

KBR, Technip and Linde selected

The three selected contractors are KBR & Tecmont consortium, Technip Energies consortium as well as Linde through its businesses at Linde Engineering and BOC UK. These three rivals, selected through a 6-month prequalification process, are now competing to provide design proposals, as well as a lump sum FEED and option for EPC execution and operations.

All three have experience and relevant licenses with hydrogen, ammonia, and CO₂ capture technologies. At the end of 2022, one of the consortia will be chosen to move into the final stage of engineering (FEED) in preparation for a final investment decision (FID) in later 2023.

"The selected contractors are renowned

for their engineering, procurement and construction (EPC) and operating capabilities in the hydrogen/ammonia and carbon capture sector. Our execution strategy enables adoption of proven technology and cost competitive solutions for first-of-a-kind projects and early engagement of UK construction and service companies," said Tanguy Cosmao, Equinor's project director for the H2H projects.

Zero Carbon Humber alliance

Both Equinor's H2H Saltend hydrogen plant and Keadby Hydrogen power station are being developed in partnership with SSE Thermal. The two project support the support the Government's aim to decarbonise the Humber and develop the UK's first net-zero industrial cluster by 2040.

Once in full swing, the H2H Saltend project will allow regional power generators to switch from natural gas to low-carbon hy-



View of H2H Saltend plant, situated just east of Hull on Humber estuary.

drogen which is estimated to reduce CO₂ emissions by 1.1 million tons per year starting from 2026-27. Thereafter, Equinor plans to supply hydrogen to Keadby Hydrogen power station which is targeted to start-up in 2028-29 and help curb CO₂ emissions reduction by nearly 2 million tons per year.

To that end, Equinor is working with SSE Thermal on hydrogen and carbon capture in the Humber and a further carbon capture power project in Scotland. It is also involved in the Net Zero Teesside power project and Dogger Bank, the world's largest offshore wind farm. ■

Mitsubishi's US arm teams up with DT Midstream on hydrogen infrastructure

Mitsubishi Power Americas has teamed up with the Detroit-based DT Midstream to jointly develop clean hydrogen energy projects across the United States. Ventures will Mitsubishi's Hydaptive hydrogen package, which integrates renewable power, gas turbines, hydrogen and energy storage while DT Midstream will leverage its widespread network of gas pipelines and storage.

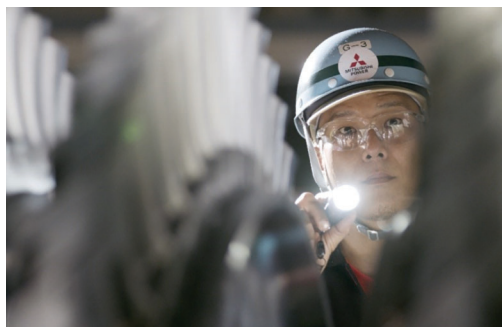
DT Midstream owns and operates approximately 1,200 miles of transportation pipelines and more than 1,000 miles of gathering lines linking supply to major demand markets.

David Slater, DT Midstream's President and CEO, said Mitsubishi Power's generation equipment and hydrogen project development expertise would make them an "ideal strategic partner" as DTM seeks to transition to clean energy solutions. "As the demand increases for low carbon energy such as hydrogen, we work with Mitsubishi Power to apply our natural gas infrastructure development expertise to hydrogen projects," he explained.

David Hunt, Mitsubishi Power Americas' VP of New Generation Systems Sales said the company is seeking to create a

"Change in Power" by providing customers with hybrid systems based on power generation and energy storage.

"Our joint development agreement (JDA) with DT Midstream, our first with a major midstream company, furthers our cause and commitment to our mission," he underlined. ■



NEWS NUDGES

Harnessing H2 for transport

Luxfer Gas Cylinders has designed alternative fuel systems which harness hydrogen for use as a transportation fuel. Such tailor-made solutions include HydroFLEX, a former Thameslink electric train retrofitted to run on hydrogen, or the Rasa H2-powered two-seater car.

CCUS market to reach nearly \$3bn in 2025

The global carbon capture, utilization, and storage (CCUS) market will grow from \$1.30 billion in 2020 to \$1.46 billion in 2021, according to ResearchAndMarket estimates. The rebound comes as companies return to normal operations and sales, after a pandemic-related slowdown. Analysts expect the market will keep growing at a rate of nearly 20% annually to reach \$2.97 billion by 2025. ■



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ACWA Power reaches financial close on \$12 billion Jazan IGCC project

ACWA Power— a Saudi developer, investor and operator of power generation, water desalination and hydrogen plants —has reached financial close for acquiring the first group of assets for the Jazan integrated gasification combined cycle (IGCC) project. The plant will be built by a joint venture that includes Saudi Aramco, Air Products and Qudra.

Once built and operational, the Jazan IGCC will serve Saudi Aramco's Jazan Refinery, which processes 400,000 barrels per day of crude oil to produce ultra-light sulphur diesel, gasoline, and other products.

Financial close was achieved on October 18 with regards to \$7.2 billion senior debt facilities, offered by a mix of local, regional, and international banks and financial institutions. Some of the limited recourse project financing is backed by the Saudi

Industrial Development Fund (SIDF), AWCA Power said. The remaining \$4.2 billion will be equity, provided by the four joint venture partners.

Largest IGCC of its kind

Situated in Jazan, Saudi Arabia, the IGCC will be the world's largest integrated gasification combined cycle plant of its kind. Developers have already bought the necessary ASUs, gasification, syngas cleanup, utilities, and power assets from Aramco which holds a 20% stake in the JV through its subsidiary Saudi Aramco Power Company.

Air Products holds the lion's share with 46% while ACWA Power owns 25% and Air Products Qudra (a 51/49 JV between Air Products and Qudra Energy) the remaining 9% in the JV.



Jazan refinery and IGCC complex in Saudi Arabia

NEWS NUDGES

Singapore to import 4 GW electricity by 2035

Singapore Minister for Trade and Industry, Mr Gan Kim Yong said the city state will import up to 4 GW of electricity by 2035, largely from renewable energy sources. Demand for carbon-free electricity keeps growing strongly in Singapore, in line with the government's 2030 Green Energy Plan, which leads to rising imports of hydro or wind power from neighbouring Malaysia.

MEA oil monitoring market nears \$87m by 2028

The Middle East and Africa (MEA) Oil Conditioning Monitoring Market is expected to reach \$86.66 million by 2028, up from \$62.46 million in 2021. According to ResearchandMarkets, this market segment is set grow 4.8% per year from 2021 through to 2028.

Exelon creates \$36m fund for small businesses

Exelon, a Chicago-based utility serving more than 10 million customers, has created a \$36 million fund to support minority-owned businesses in its communities. The 'Racial Equity Capital Fund' is designed to help these businesses obtain capital with a view to creating local jobs. Loan between \$100,000 and \$300,000 are on offer, and Exelon estimates its initial equity investments will amount to nearly \$1 million.

Wärtsilä to supply flexible power plant and energy storage to Bahamas

Bahamas Power and Light Company (BPL) has turned to Wärtsilä to deliver and install an 25 MW / 27 MWh energy storage in combination with a 132 MW power plant to enhance grid stability. The fast-ramp power unit will be operating on seven 50DF dual-fuel engines, supplied to BPL earlier.

The order, booked in the third quarter, comprises 27 units of Wärtsilä Grid-Solv Quantum energy modular storage system. The installation will be located at the Bluehills Power Station and will be carried out by Wärtsilä under a full EPC contract. The system is anticipated to be fully operational by mid-2022.

Operations of the flexible gas-fired power plant and energy storage unit will be fine-tuned by Wärtsilä's GEMS digital energy platform. This support plans by the Government of the Bahamas to increase its share of renewable sources, notably solar, by 30% by 2030.

"BPL's chief executive Whitney Heastie said Wärtsilä won the bid with a solution that will greatly assist BPL in the process of

improving system reliability and service quality."We believe this energy storage solution will help us as we work to continue our reduction of operational costs on the island," he added.

With island grids, such as that of the Bahamas, grid resilience is critical. The balance between load and power generation needs to be constantly maintained to guard against instability caused by sudden load changes or extreme weather.

The Wärtsilä energy storage system will de-

liver notable benefits via spinning reserve support for the existing engine generating sets. At the same time, the energy storage system adds capacity, lowers operating costs, and stabilises the grid.



Render of Wärtsilä energy storage

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