Gas to Power Journal
Peakload Power and Energy Storage

Weekly News 19 November 2021

EU gas prices surge after German regulator suspends Nord Stream 2

Benchmark European gas prices have surged and are forecast to stay high well into 2022 after the German energy regulator (BNetzA) suspended the certification procedure for Nord Stream 2. The watchdog said the process was halted because the Swiss-based consortium behind the Gazprom-led pipeline first needs to set up a German subsidiary to secure an operating license.

Prices at Europe's benchmark gas trading hub, the Dutch TTF surged nearly 11% as the news of the hold-up broke, with the TTF front-month reaching €90.40/MWh on Tuesday afternoon.

With this ruling, BNetzA threw yet another roadblock to the contested project – criticised for increasing the dependence of continental Europe on Russian gas supply.

Gazprom's contractual gas deliveries account for around 50% of the EU's total gas imports, with most of the rest coming from Norway and Algeria. In the first 10 months of 2021 Russia supplied a total of 31,806 gigawatt hours a day (GWh/d) of gas though its three main pipelines to Europe, Refinitiv Eikon data shows.

First gas flows through Nord Stream 2 unlikely until summer 2022

"This does push back expected timelines quite a bit," analyst Trevor Sikorski at Energy Aspects commented on BNetzA's decision. In his view, it remains "unclear" how long the process of establishing a new company and reapplying for certification would take.

"First flows through the pipeline look very unlikely in the first half of 2022," he suggested, indicating European gas prices will remain elevated.

Gazprom is stand to benefit from the price surge: the Russian gas giant has boosted deliveries to its major European customers in recent months to cash in on the high prices.

Storage levels are still at unseasonably low levels for this time of the year, given that operators had not been slow to replenish storages over the summer in the face of high prices and a surge in demand as economies recovered from the Covid-19 crisis.

Critics accuse Gazprom of withholding gas supplies to Europe

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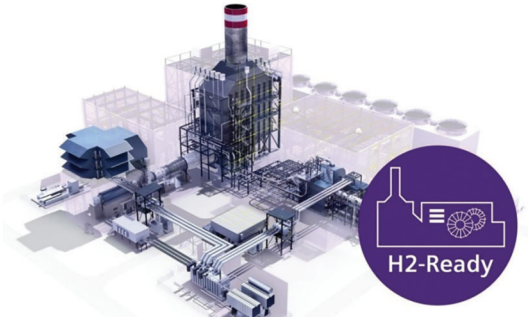
Siemens Energy: first OEM with certified 'H2-Ready' power plant concept

German classification society TÜV SÜD has tested and certified Siemens Energy's 'H2-Ready' power plant concept, increasing investment security for utilities. Firing combined-cycle gas power plants partially or fully on hydrogen significantly lowers the plant's carbon footprint. Some single-cycle plants are already being sold as 'H2-Ready' today.

"Until now, however, there hasn't been a clear definition of what this term means," engineers at Siemens Energy cautioned. The German OEM stressed it is "the first company worldwide to receive this certification" for combined-cycle gas power stations.

Extending H2-cofiring to open-cycle plants

But to meet ambitious climate goals, agreed at COP26, it will not suffice to modify only combined-cycle power plants to run on hydrogen. The certification offered by TÜV SÜD can hence be applied to a wide range of solutions.



Various manufacturers, including Siemens Energy, INNIO, Wärtsilä and GE Gas and Power already offer hybrid solutions that combine hydrogen-based power generation with energy storage, and partially also re-electrification.

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AGENDA

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to pressurise the German national governments to fast-track the approval process of the contested Nord Stream 2 pipeline. The Kremlin repeatedly denied such claims, and state-owned Gazprom stressed it "continues to inject its gas into five European underground storage facilities."

Russia boosts gas flows to EU in competition to LNG

From January in 2021 through November 15, Gazprom has increased pipeline gas supplies to Germany by 19.6 % in an effort to outcompete Norwegian gas and LNG. Supplies of Russian gas to Turkey's Botas soared 98.1% since the start of the winter season – just when Europe had been at the brink of serious supply shortages as storage levels were at historic lows.

According to Gas Infrastructure Europe (GIE), underground gas storage facilities in Europe were filled to 74% of their capacity as of November 13, with working gas inventories lagging behind last year's volumes by 19.5 billion cubic meters (bcm).

"As much as 6.6% of the amount of gas injected during the summer period has already been withdrawn from the facilities," analysts at GIE noted. Between November 1 and 5, five daily records for withdrawal of gas from Europe's UGS facilities were broken. The largest amount withdrawn was on November 3 at 345.2 million cubic meters (mmcm).

Apart from record supplies to Turkey and Germany, Gazprom also increased supplies to Italy (+18.3%), Romania (+247.1%), Serbia (+92.9%), Bulgaria (+48.2%), Poland (+7.3%), Greece (+13.7%), Slovenia (+53.3%), and Finland (+10.8%). ■

JERA invests in Freeport LNG, broadens supply for its power gen fleet

Japan's largest power plant operator JERA has bought a 25.7% stake in the US liquefaction terminal Freeport LNG, together with Global Infrastructure Partners. The deal broadens JERA's supply sources to its global fleet of gas power stations, situated mostly in Japan and neighbouring Asian countries.

Together with Freeport LNG Development, the owner of the LNG terminal, JERA contributed to the stable operation of Train 1. As a result of the latest transaction, JERA will not only be involved in the entire existing Freeport LNG project (three trains with an annual production capacity of approximately 15.45 mtpa) but will also work with Freeport LNG Development to develop Train 4.

As one of Asia's largest utilities, JERA currently operates and provides fuel for 26 power plants in Japan and imports LNG into 11 of Japan's network of 37 terminals. Cleaner-burning gas power generation is viewed as a transition fuel and vital backup for the rising volume inherently intermittent renewable energy sources.

Demand for LNG has skyrocked in the run-up to the winter season, propelling up prices at the Japan-Korea Marker (JKM) to record highs. JKM futures for December 2021 delivery were last seen trading at $31.57/MMBtu, while futures for delivery in January 2022 are trading at $30.44/MMBtu.

Freeport LNG in Quintana Island, Texas.

LNG-based power accounts for a large share of JERA's revenue: During the fourth quarter of 2021, electricity generated from LNG amounted to 46.8 terawatt hours (TWh), compared with 14.9 TWh of power from thermal coal. The fiscal second-quarter proportions were 76% gas-fired power from regasified LNG and 24% coal-fired power, according to official figures.

In the three months to September, JERA reported a stark rise in operating revenue although 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 its JERA Global Markets gas trading arm.

As Japan's largest electric power producer, JERA is jointly owned by Tokyo Electric and Chubu Electric. It can purchase up to 35 million tonnes per annum (mtpa) of the super-chilled gas and controls a fleet of 20 LNG carriers. ■

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Berlin-headquartered Siemens Energy said it is currently involved in the construction of several power plants that are designed to be partially or fully hydrogen-fired.

Three steps to get certified

Working closely with the classification society TÜV SÜD, engineers at Siemens Energy have set the standards to test and verify when a power station is 'hydrogen ready'. In the end, it takes three stages to get a combined-cycle power plant certified:

First, a concept certificate for the conceptual design (including boundary conditions) need to be presented during the bidding phase; second, a project certificate for the implementation phase, in other words, the final plant design and its specifications; and third, a transition certificate is needed to convert in existing CCPP to burn hydrogen which includes a review of the retrofit measures and their impact on safety and performance.

"Our guideline enables OEMs, plant operators, and insurers to use a standard transparent framework", explained Reiner Block, CEO of the Industry Service Division at TÜV SÜD. "The certification covers a complete power plant with the relevant subsystems." The "H2-Ready" certification, however, doesn't certify existing power plants; rather, it provides a roadmap that describes how plants can be converted over time to co-fire hydrogen or even burn pure hydrogen. ■

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Publisher
Stuart Fryer

Editor
Anja Karl
Tel: +44 (0)7733 684 682
anja@gastopowerjournal.com

New Business & Databases
Stephan Venter
Tel: +44 (0) 207 017 3407
venter@gastopowerjournal.com

Subscriptions
Margarita Tokere
Tel: +33 (0)7 67 62 58 77
margarita@gastopowerjournal.com

Layout & Production
Vivian Chee
Tel: +44 (0) 208 995 5540
chee@btconnect.com

China's unexpected climate deal with the US sparks cautious optimism

An unexpected climate declaration between China and the US has sparked cautious optimism that "1.5°C remains within reach." Addressing issues like cutting CO2 and methane emissions and reigning in illegal deforestation, the two sides declared they will "expand individual and combined efforts to accelerate the transition to a global net zero economy."

"The two sides are intent on seizing this critical moment to engage in expanded individual and combined efforts to accelerate the transition to a global net zero economy," the joint declaration reads. Leaders of China and the United States agreed to set up a working group which should "meet regularly to advance the multilateral process" and to "enhance concrete actions in this decade."

Will leaders agree to link ETS globally?

After a week of political announcements, pledges and posturing, ministers have joined their negotiators over the course of this week to haggle over the nitty-gritty of the Paris Agreement rulebook. Ministers welcome the China/US declaration but all eyes are now on whether it will be possible to reach an agreement for carbon markets under Article 6.

Article 6 creates a new mechanism for offsetting carbon emission with the aim of linking emission trading schemes globally. If enacted as planned, it will allow to transfer carbon credits internationally in order to establish a new mechanism to trade carbon credits from emission reductions generated from low-carbon projects outside the long-standing European Emission Trading System (EU-ETS).

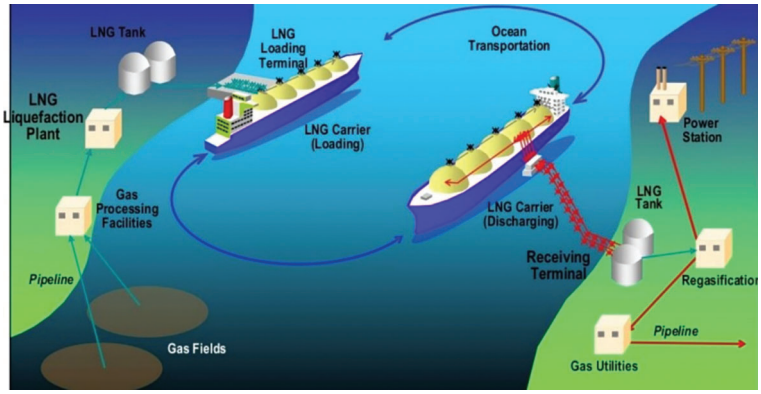
Settling the rules among all participants of COP26 on how to link up the EU-ETS and other regional emission trading schemes link the US Regional Greenhouse Gas Initiative (RGGI), is hoped to free up trillions of dollars in investment in green power generation projects, and hybrid hydrogen and energy storage installations. ■

CCS could curtail carbon emissions of LNG projects substantially

Carbon capture and storage (CCS), alongside with electrification could substantially decarbonize LNG projects. More than 25% of overall emissions could be removed depending on the technology adopted, Wood Mackenzie says, with capturing reservoir CO2 found to be much cheaper than post-combustion capture.

Around 40% of the total scope 1 and 2 LNG emissions are from the process of gas liquefaction, but senior analysts Daniel Toleman underlined that "each plant has a unique emissions profile," hence the best way to reduce the carbon footprint of an Arctic liquefaction plant may vary significantly from one in Qatar or Australia.

"The good news is that LNG players are well placed to lead the CCS charge, with strong balance sheets, operational capability and reservoir expertise. There are also economic incentives for pursuing CCS as reducing emissions mitigates against a carbon tax, helps future-proof the asset and can offer pricing upside," he said.



Comparing two technologies

The cost of retrofitting an LNG terminal with CCS depend on how far the CO2 source is to the injection site, the project's economies of scale, and whether existing infrastructure can be repurposed. Capturing reservoir CO2 - irrespective of whether the CO2 is sequestered or vented - is significantly cheaper than post-combustion capture.

All liquefaction projects need to remove carbon emissions from the feedgas stream before cooling down the natural gas to minus 165 degrees to prevent the CO2 from freezing and blocking processes. As such, the acid gas removal unit (AGRU) used to capture CO2 does not incur additional costs. Reservoir CCS can reduce the overall intensity of LNG projects by 25%, and in some cases up to 50%, according to Wood Mackenzie findings.

In contrast, the second approach of post-combustion CCS involves capturing CO2 from the LNG flue gas stream. This technology needs to be retrofitted from scratch but when integrated in a new-build LNG facility, there can be some design and location synergies. Tax credits can also help improve the economics of post-combustion CCS, analysts noted. "For example, in the US, new-build post-combustion projects can become very competitive as well with the application of the 45Q tax credit for carbon sequestration," Toleman explained.

First movers in Qatar, Australia and Malaysia

Looking ahead, Toleman expects CCS will play a significant role in reducing emissions from LNG projects as long as country-specific legislation progresses, and costs can be brought down. "Low-cost reservoir CCS projects are likely to be the first to move ahead," he said, urging market observer to: "look out for projects in Qatar, Australia, Malaysia and Timor Leste.

LNG players in the US, who benefit from the 45Q tax credit, will likely be the first LNG players to take post-combustion CCS forward. Apart from applying CCS technology, operators of LNG export terminals can also lower their emission footprint by paying for carbon offsets or investing in systems to reduce methane leakage. ■

NRW's new state premier ready to end coal by 2030

Hendrik Wüst (CDU), new state premier of North-Rhine Westphalia (NRW), has revised the coal exit strategy and now aims to phase-out coal as early as 2030. NWR is home to some of Germany's largest still operating lignite mines and coal power stations, hence the fuel switch to renewables and gas generation will impact on the country's overall supply security.

The government that Wüst inherited, after the CDU's unsuccessful chancellor candidate Armin Laschet stepped down from his post, is keen to push through an earlier coal phase-out and a speedier renewable energy rollout. His coalition government with the Liberals (FDP) aims to present an "Energy Supply Strategy 2.0" in the coming weeks.

The German coal exit law mandates that the last plant will be shut down in 2038 at the latest the Green Party's good result in the federal election in September has conjured up a fresh debate about accelerating the coal phase-out plan. Laschet had been a key figure in finalising negotiations that led to the current coal exit plan which also includes billions in state support for the economic development of Germany's former mining regions as well as compensation plans for operators of coal-fired power stations, including Uniper and RWE.

Open-cast lignite mine Garzweiler in Rheinland, part of NRW.

Incentives for grid balancing gas power plants

The new CDU/FDP coalition in NRW also agreed to incentivise "alternatives for a secure electricity supply" in the event of renewable not supplying enough, Wüst said. This is a barely disguised move towards subsidising fast-ramp gas power stations despatched for grid stabilisation purpose.

Bavaria, Germany's industrial southern state, has already seen the construction of several such grid balancing power plants.

A remote-controlled 300 MW gas power plant is currently under construction by Siemens Energy in Leipheim. Owned by LEAG, the 300 MW plant will only be dispatched on request of the TSO Amprion to ensure grid stability in an emergency.

The project was developed together with Stadtwerke Ulm/Neu-Ulm and STEAG, and all regulatory permits have been obtained. Once commissioned, the 300 MW plant will be operated and dispatched remotely from Siemens Energy's ISO-certified Remote O&M Support Center (ROMSC) in Erlangen. ■

COP26: World leaders agree to phase out coal in last minute deal

World leaders have reached a historic deal at the COP26 Climate Summit: At least 23 countries – excluding China and India – committed to phase out coal-fired power generation, while major international banks want to end public financing of new unabated coal power by the end of 2021. Germany's incoming government hence needs exit coal earlier than planned.

The signatories on new COP26 commitment to phase out coal power include Indonesia, Vietnam, Poland, South Korea, Egypt, Spain, Nepal, Singapore, Chile and Ukraine. In a new 'Global Coal to Clean Power Transition Statement', countries also committed to scaling up clean power and ensuring a just transition away from coal.

Front-runners sign UK-led declarations

In addition, a group of 25 nations including Canada, Denmark, Italy and the US along with public finance institutions have signed a UK-led joint declaration committing to ending international public support for the unabated fossil fuel energy sector by the end of 2022. Instead, they want to prioritise financial support for the clean energy transition.

Germany, Europe's largest economy, has seen a long-lasting battle over how and when to phase out the country's existing fleet of coal power stations. 2038 had been set as an end date for the final coal power plant to go off the grid – but following the win of the SPD and Green Party in the general election in September, the newly instated government now aims to accelerate the timeline of the agreed coal phase-out plan.

In a hard-fought compromise, Berlin in 2020 agreed a landmark €40 billion deal to phase out coal and investing offshore wind, solar power and new long-distance power transmission lines. The agreed phase-out roadmap entails a boost for renewables to reach a 65% share in power consumption by 2030 in order to compensate for the closure of coal power plants.

According to Germany's coal exit law, the last lignite fired power station has to be discontinued by 2038. While there is a set phase-out time table for large lignite plants, hard coal stations and small lignite units can participate in auctions for receiving payment in return for closing down. This incentivises an early exit. However, the German government has come under pressure for compensation payments agreed with large lignite operators RWE and LEAG for closing their plants.

CO2 price – a trigger for faster German coal exit

Rising CO2 costs have been accelerating the coal exit in Germany. With the EU's carbon price trading above €56 per ton, a lignite power station in Chemnitz will be shut early and Armin Laschet (CDU) suggested North Rhine-Westphalia (NRW) "could manage [the coal exit] as early as 2030" – years before the mandatory exit date. ■

SES launches 100+ Ah li-metal battery to be manufactured in Shanghai

Boston-based SES, formerly known as SolidEnergy Systems, has introduced Apollo – a 107 Amp-hours (Ah) lithium-metal battery, the largest commercially-ready battery in the world and a breakthrough for the automotive industry. The Li-Metal batteries will be manufactured at Shanghai Giga, a 300,000 square-foot factory due to be built by 2023.

Apollo is a powerful lightweight: It can deliver 107 Ah while weighing only 0.982 kilograms, and has an energy density of 417 watt-hours per kilo (Wh/kg) and 935 watt-hours per litre (Wh/L).The novel Apollo battery also demonstrated similarly high capacity and energy density when tested at 10 hour, 3 hour, and 1 hour discharge at room temperature.

Both announcements were made at SES Battery World, a virtual event taking place in the US, South Korea and China in early November. Going forwards, SES is working with the US carmaker GM and the Japanese firm Hyundai to deliver practical automotive A samples next year. In July 2021, announced plans to list on the New York Stock Exchange (NYSE) through a merger with Ivanhoe Capital.

"The industry doesn't need another battery breakthrough. What the world needs is someone who can take a battery breakthrough and make it work, truly, practically and completely, and then scale it up into hundreds of thousands and millions of vehicles. That's what we're here to do," said Dr. Qichao Hu, SES founder and CEO.

There's a race among leading global carmakers and next generation battery suppliers to develop and demonstrate the world's first 100 Ah Li-Metal battery. "Today we did it [and] we will continue to work with our OEM partners to optimize this battery and bring it to commercial production," Dr Hu said, expressing confidence to win this race, and be the first to commercialize this next generation Li-Metal battery.

> "What the world needs is someone who can take a battery breakthrough and make it work, truly, practically and completely, and then scale it up into hundreds of thousands and millions of vehicles"
>
> *- Dr. Qichao Hu, SES founder and CEO*

Li-Metal battery ready by 2025

Eager to accelerate R&D and commercialisation, SES introduced its 3 parallel development tracks: Hermes (platform for material development), Apollo (engineering capability for large automotive cells), and Avatar (AI-powered safety software to monitor battery health).

The aim is to start commercialization of Li-Metal batteries in 2025.

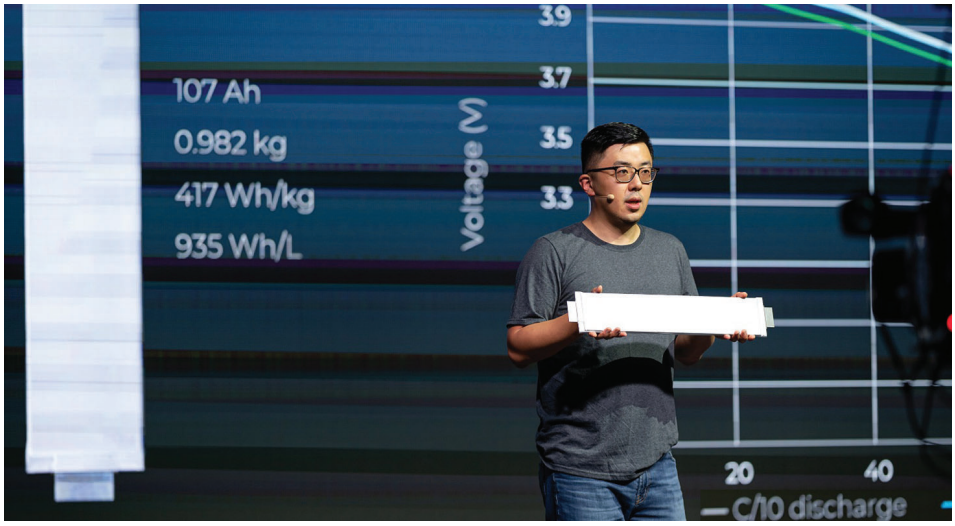
"Of all the public claims of new battery technologies, SES is the first which I am aware of to achieve large cell format Lithium metal anodes," commented Bob Galyen, owner of Galyen Energy and former chief technology officer of CATL. Robert Friedland, chairman and CEO of Ivanhoe Capital singled out the units as "by far the most advanced next generation battery technology."

Solid state vs. Li-Metal batteries

Prior to commercialisation, the batteries need further testing and optimization given that they must deliver high energy density over a wide range of temperature and power density.

"A car needs to work in hot and cold environments and perform seamlessly when driven fast or slowly," Dr Hu said, suggesting solid state batteries can never achieve this performance at the level of our hybrid Li-Metal batteries." He also unveiled an aerial image of SES's new Shanghai Giga.

Scheduled for completion in 2023, the Shanghai Giga will be a 300,000 square-foot facility situated in Jiading, Shanghai, capable of producing 1 GWh of Li-Metal batteries annually. ■



Apollo, the world's largest Li-Metal battery

NEWS NUDGES

German TSOs want three phased-out coal plants as backup

Three hard coal-fired power plants in Germany, due for phase-out and decommissioning next summer, might have to stay onstream to ensure supply security after regional TSOs said the units were "system relevant". It is now up to the federal grid agency BNetzA to decide whether the three plants, owned by Uniper, RWE and STEAG and situated in the state of North-Rhine Westphalia (NRW), will be given permission to stay operational or whether they need to be retrofitted or shuttered.

Gazprom aims to increase contractual supply to VNG

Russia's Gazprom is in negotiations with VNG, one of Germany's largest gas importers, to extending long-term gas supply contracts and "increase the supply volume thereunder." Leipzig-based VNG imports and stores Russian gas in Germany's eastern states and Berlin, and together with Gazprom it is building the Katharina underground gas storage (UGS) project with a design capacity of 650 million cubic meters (mmcm) of working gas volume and 26 mmcm daily withdrawal rate. The Katharina UGS is due completed in 2025. ■

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Ansaldo publishes 1st sustainability report, focus on green energy

Ansaldo Energy has published its first sustainability report in what it calls an "important step in the direction of transparency." The report's statistics show Ansaldo managed to reduce greenhouse gas by -280.6 tons per CO2 emmitted (tCO2e) to date (-1,563.8 of induced emissions) while using less water per hour worked. Going forward, the focus is on green energy and digital transition.

"During the current delicate phase of recovery of the economy following the pandemic, at a time of energy transition and green change, the report is intended to certify Ansaldo Energia's focus on making its business more sustainable," the company said in a statement. By now, the manufacturer already managed to lower its water consumption by -20.2%, and production of special wastes by -10.5% per hour worked, compared to the previous year.

Focus on green and digital transition

"The extraordinary nature of the year 2020 led us to take a closer look at our own processes and actions and our relationship with our stakeholders. This reflection, in addition to world-wide demand for attention to sustainability issues, led to the decision to create and certify our first sustainability report," said Irma Belardi, Head of Corporate HR and Sustainability.

Based on its products and competences, the Italian turbine manufacturer wants to "play a key role e in promoting a transition to an energy-efficient economy producing less CO2 emissions," Belardi said, underlining the company's dedication to "priories the green and digital transitions.

Known for AE94.3A gas turbine

The Italian engineering company Ansaldo Energia is 88% owned by CDP Equity [Cassa Depositi e Prestiti Group] and 12% by Shanghai Electric. One of the company's best known gas turbines is the AE94.3A gas turbine, powering many fast-ramp open-cycle power plants worldwide, like the Irsching 6 unit in Bavaria built for the grid operator Tennet, or Marbach 4 built on behalf of EnBW.

In 2020 Ansaldo Energia became the first Italian company in the industry to obtain Biosafety Trust Certification, a new form of certification of best practices minimising the risk of spreading epidemics, in addition to ISO 14001 (environmental management), ISO 45001 (safety management), ISO9001 (quality management) and ISO 37001 (anti-corruption) certification. ■

Rolls-Royce and SDCL launch 'Energy-as-a-Service' on subscription basis

Rolls-Royce has teamed up with Sustainable Development Capital (SDCL) to jointly offer 'Energy-as-a-Service' solutions. The agreement allows Rolls-Royce to provide customers with electricity and/or heat as a subscription service, generated by a sustainable energy system that removes the need for customers to secure up-front infrastructure finance or operate the system themselves.

Improving access to finance for sustainable energy solutions was one of the key themes, debated at the World Climate Conference (COP26) in Glasgow on 11 November, where the agreement between Rolls-Royce and SDCL was signed.

'Energy as a Service' means that a customer pays for heat and power through a subscription model, giving attractively prices access to renewable energy. The solution is applicable for electrifying remote areas without grid access, industrial parks that want to powered with green energy as well as emergency back-up and mines that want to replace aging onsite plants with as much renewable energy as possible.

The portfolio made available through 'Energy as a Service' ranges from CHP units to battery containers and complex microgrids.

The energy systems to be set up range from small CHP plants to battery containers and complex microgrid solutions. Over the coming years, OMTU is striving to expand its product range primarily in the field of hydrogen-powered engines, fuel cell systems and combustion engines that can be operated with sustainable fuels such as e-diesel and hydrotreated vegetable oils (HVO).

SDCL will finance these projects while Rolls-Royce and its power systems unit MTU will design, build, commission and operate the new sustainable power projects. The investment fund has more than a decade of experience of developing and financing clean and decentralised energy infrastructure projects in the UK, continental Europe, North America and Asia.

Through MTU, Rolls-Royce has a portfolio of microgrid systems that bring together solar and wind power with battery storage and gensets (an engine and electrical generator). It is currently developing fuel cell systems and making mtu engines compatible with sustainable fuels, notably blue and green hydrogen. ■

NOF support Sembcorp's 300 MW Net Zero power plant on Teeside

Business development specialist NOF has partnered with 8 Rivers Capital and Sembcorp Energy UK to develop the UK's first Net Zero emissions power plant on Teesside in northeast England. The 300 MW plant, named Whitetail Clean Energy, could be commissioned as early as 2025 at Sembcorp Energy UK's site at Wilton International.

8 Rivers Capital, a US-based fund, is developing the project though its London-based arm Zero Degrees Whitetail Development in in collaboration with Sembcorp Energy UK, part of Singapore-based Sembcorp Industries.

Combusting gas with O2

Once up and running, NET Power process combusts natural gas with oxygen (O2) – rather than air – and uses supercritical CO2 as a working fluid to drive a turbine instead of steam. As a result, near all air emissions, including traditional pollutants and CO2, are eliminated.

Better still, 'pipeline quality CO2' is produced that can be captured and stored offshore which allows Whitetail to operate carbon neutral.

Supply-chain opportunities

Durham-baes NOF said it will give its strategic partners on the Whitetail project access to its membership base, which contains technology-led supply chain companies. A series of events will be held to share knowledge between NOF members and the Whitetail project to foster supply-chain opportunities that the development of the UK's first Net Zero Power station is expected to generate.

Andy Koss, CEO of UK and Middle East at Sembcorp Industries said: "We are really keen to use local partners to support Whitetail's supply chain (…), we are committed to reducing carbon emissions in the energy sector to create a greener future, and we are keen to engage with others that can contribute to the UK's move towards a low-carbon economy.

"Working with NOF, Whitetail Clean Energy will benefit from the organisation's extensive network and market expertise, in support of the development of this first-of-a-kind carbon capture technology on Teesside," he added. Developers say the project would create more than 2,000 jobs during construction, and 200 indirect and direct highly skilled jobs during operation. ■

Andy Koss of Sembcorp Industries and Joanne Leng of NOF

Wärtsilä wins two EPC contracts for power plants in Latin America

The Finish technology group Wärtsilä has won EPC contracts, worth €480 million combined, to realise two power plant projects in Latin America. The plants, based on 22 Wärtsilä 34DF multi-fuel engines and 24 Wärtsilä 50DF multi-fuel engines, are scheduled for completion in mid-2022 and mid-2023.

The orders were signed in November this year and are part of the Wärtilä's Q4/2021 order intake. Commenting on the deals, CEO Håkan Agnevall said the company strives to shape decarbonisation in the energy markets and lead the transition towards a 100% renewable energy future.

50DF engines operate on the lean-burn principle. They can be run on either natural gas, light fuel oil (LFO), or heavy fuel oil (HFO), and can smoothly switch between fuels whilst operating. It is designed to provide the same output regardless of the fuel.

Recently, the 500th engine factory acceptance test (FAT) for the 50DF engine was completed at the Wärtsilä-Hyundai Engine Company facility in Mokpo, South Korea.

"Our state-of-the-art flexible power generation solutions provide a unique combination of energy efficiency, and fuel and operational flexibility, supported by high reliability. To enable an optimised energy transition path, systems need to be able to respond rapidly to the need to switch the power on and off quickly as supply and demand fluctuates," he explained, indicating Wärtsilä's solutions would deliver the needed flexibility to make this possible.

The Finish technology group has a track record of 74 GW of power plant capacity and more than 80 energy storage systems delivered to 180 countries around the world. ■

NEWS NUDGES

General Fusion sets up new base in Tennessee

General Fusion has set up a new operations base in Oak Ridge, Tennessee, as it seeks to commercialize fuson technology in collaboration with national laboratories, universities, and the U.S. government. This expansion will create up to 50 technical jobs.

Bloom Energy delivers 1 MW renewable power from dairy farm waste

Bloom Energy has been contracted to deploy a 1 MW fuel cell at Bar 20 Dairy Farms in Kerman, California, to produce on-site, renewable electricity from dairy cow manure. Dairy biogas contains up to 65% methane and the waste-to-energy project captures methane that would otherwise be released into the atmosphere. The installation marks Bloom's first biogas project. ■

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