



Weekly News

26 March 2021

Rolls-Royce tests use of hydrogen in ships, cars and power gen

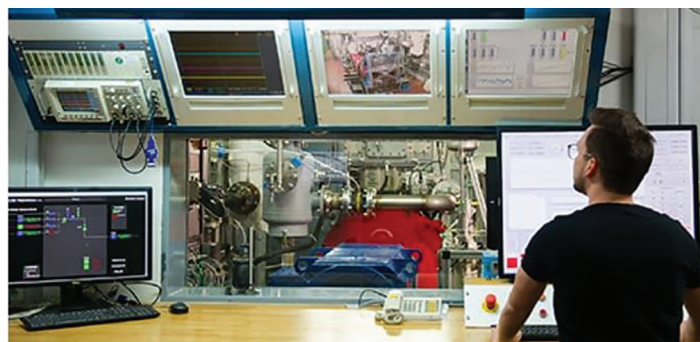
MethanQuest, a flagship R&D project launched by Rolls-Royce in 2018, has gathered 29 research and industry partners to look into novel ways for producing hydrogen and methane from renewables. Interim results relate to new electrolysis systems adjacent to wind parks, and the use of green gas in car engines.

The German economy and energy ministry is providing some €19 million in funds to the MethanQuest project. Norbert Brackmann, member of the German Bundestag and coordinator for the maritime industry highlighted the need for "innovative solutions" for using renewables to make new fuels. "It is essential to identify future trends at an early stage and promote their development. This is why we began funding the MethanQuest research project in 2018, and its interim results already show very valuable findings," he said.

The interim reports, submitted by project partners this week, entail detailed concepts for energy systems that efficiently couple the transport, electrical power, gas and heating sectors. Common to all plans and processes is the integration of renewable energies.

Manufacturing methane from renewables

Six subprojects – led by DVGW and Rolls-Royce Power Systems – are working on numerous research projects. The MethanFuel group, for example, looks into new processes for manufacturing methane out of



Test bench running an Otto engine on hydrogen at TU Munich

renewables. All the technologies involved – from water electrolysis to CO₂ extraction and methanation – have been examined and enhanced.

"Hydrogen and methane (e-methane) manufactured using renewable energy resources are set to play an important role in the future [particularly because] grid balancing increasingly depends on flexible gas-fired power plants," said project coordinator Dr Frank Graf from DVGW Research Center at the Karlsruhe Institute of Technology.

Preparing engines to combust renewable gas

In various sub-projects, the partners are also working on engines capable of combusting gas made from renewables highly efficiently without producing harmful by-products. The research group MethanPower, coordinated by Rolls-Royce, is looking at how to fuel

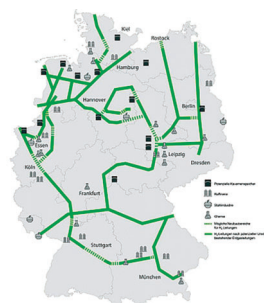
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German regulator approves conversion of gas pipelines to hydrogen

Germany's Federal Network Agency (BNetzA) has granted approval for the upgrade of over 24 transmission pipelines to also transport hydrogen. German gas grid operators had said an initial hydrogen grid could be established at "justifiable cost" of around €660 million, largely by converting current pipelines.

In its regulatory ruling, BNetzA accepted operators' grid development plans for 2020-2030, allowing the pipelines to be formally taken out of the gas grid and added to a future hydrogen grid, providing this does not undermine the performance of the gas grid. By approving the grid development plan, BNetzA has also given the green light for TSOs' plans to invest €7.83 billion in the German natural gas infrastructure over the current decade which includes the construction of 1,620 kilometres of pipelines.

However, the regulator pointed out that "a conversion of the existing natural gas infrastructure to transport hydrogen is generally much cheaper than building a new network from scratch." German gas TSO generally agree and are looking to convert various pipelines in what they see as a reasonable cost that could come to just under €700 million,



factoring in some leeway for cost overruns.

The overarching ruling is that the hydrogen network cannot be part of the natural gas grid development plan, and new rules have to be established first. TSOs commented the regulators' action allowed them to start work on individual projects. But they still want BNetzA to set out an integrated grid plan for both natural gas and hydrogen, saying this was the only way to ensure

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and run large-sized Otto engine on hydrogen and methane (pictured). Tests are coordinated by Rolls-Royce Power Systems and researchers say they are "delighted by the results so far" – hydrogen combustion produces low levels of noxious emissions.

Using seawater for electrolysis

To enable hydrogen to be produced in offshore wind parks in high quantities in the future, the TU Berlin is looking into how seawater can be used directly for

electrolysis without the need for prior desalination.

The process steps involved in turning hydrogen into e-methane were successfully demonstrated at DVGW and the Engler-Bunte-Institut (EBI) at the Karlsruhe Institute of Technology. Firstly, a long-term experiment in pulling CO₂ from the air was conducted. And a new plant has been put in place that is capable of producing 10 cubic meters of pure methane per hour.

Karlsruhe port gets LNG supply system with microgrid

In southwest Germany, partners working on the MethanGrid sub-project have devised an e-methane storage and distribution system for Karlsruhe's Rhine port which provides fuel for ships and injects the remaining gas into the local grid.

A locally-coupled microgrid has been set up to serve the port. It couples all the current sectors i.e. electricity, gas, heating, transport and industry. ■

Norway vetoes Rolls-Royce's sale of Bergen Engines to Russian buyer

The Norwegian government has ruled the sale of Bergen Engines to TMH Group of Russia "must be stopped." Rolls-Royce had announced the €150 million deal on February 4, but Oslo's ruling threatens to derail the sale and undermines the company's target to raise £2 billion from disposals.

"Today's announcement will cause significant uncertainty in Bergen Engines, which employs more than 900 people worldwide including 650 in the main factory in Hordvikneset, Norway," Rolls Royce CEO Warren East said when commenting on the decision late Tuesday this week.

The British engineering company is now consulting with the Norwegian government to swiftly find another option, which can provide Bergen Engines and its people with the investment required for the future and Rolls-Royce with an appropriate outcome.

"We remain committed to our target, as set out originally on 27 August 2020, to raise at least £2 billion from disposals by early 2022," Mr East stressed, which indicates there will be further sales of Rolls-Royce affiliations.

Selling non-core assets

Bergen Engines has a skilled workforce and significant future commercial opportunities,

Mr East acknowledged, "but the manufacture of medium-speed gas and diesel engines is not core to our long-term strategy and we do not intend to retain the business."

The intended buyer, TMH International, is part of the Russian-based engineering company TMH Group, the world's fourth largest supplier of rail rolling stock which currently produces more than 850 engines a year. Following the takeover, Bergen Engines would be operated as a stand-alone business by TMH International out of Switzerland.

Rumours about hostile takeover

Trying to calm down investors after rumours were spreading that Rolls-Royce itself might be subject to a hostile take-over, Mr East said the company was on track to deliver its targeted £1.3 billion cost savings by 2022, and will generate at least £2 billion from divesting part of its current operation.

To shield the cash-strapped company, the



Bergen Engines' assembly line in Hordvikneset, Norway.

Rolls-Royce CEO arranged a £5 billion financing package in November 2020 that helps strengthen the balance sheet and supports the company's long-term strategic turnaround. The civil and aerospace engine maker also announced plans to cut nearly 9,000 positions worldwide, with more than 3,000 of those in the UK.

Trying to remain positive, Mr East said Rolls-Royce strategic aim was to expand its portfolio of MTU engines to include uninterruptible power supply (UPS) systems, based on Kinolt technology. Rolls-Royce bought Kinolt in 2020 and is now marketing the firm's flywheel energy storage and power supply systems under the name MTU Kinetic PowerPacks. ■

Gas to Power Journal

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

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the "establishment of a supra-regional hydrogen network as the backbone for a competitive hydrogen economy".

Hydrogen may solve energy transition hurdles

Green hydrogen, produced via electrolysis from renewable energy, is considered key to solving some of Germany's energy transitions challenges, such as decarbonising industry processes or long-haul freight

transport. However, the country's current gas grid is not fit to handle pure hydrogen.

Policy makers support various research initiatives into hydrogen co-firing for power generation, or use as a transportation fuel for ships, cars and trucks. To that end, the Government is advocating a timely conversion of parts of the German gas grid to serve as hydrogen transport infrastructure, promising subsidies and other financial support for the TSO to shoulder the necessary upgrades. ■

Snam tests injection of hydrogen into Italian gas grid

Italy's gas network operator Snam will become Europe's first TSO to test the injection of a hydrogen blend into its gas grid through a cooperation agreement with UAE-based Mubadala Investment. Snam imports LNG via the FSRU Toscana and the onshore Panigaglia regas facility near Genoa, where carriers with the hydrogen-LNG blend from Abu Dhabi are likely to berth.

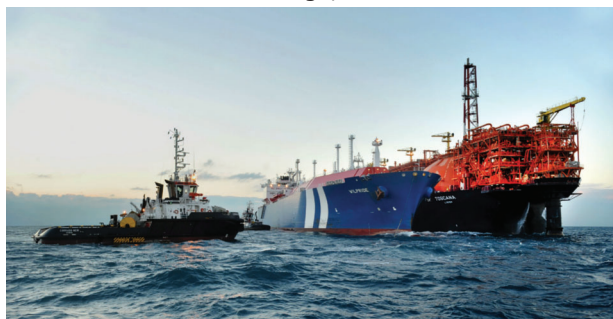
Abu Dhabi, one of the seven emirates in the United Arab Emirates, is the longest-standing LNG exporter in the Middle East from its Das Island liquefaction plant in the Gulf. Snam said it signed a Memorandum of Understanding with the Abu Dhabi sovereign investment company Mubadala Investment Co. focuses on technical collaborate as well as joint investment and development initiatives on future uses of hydrogen.

The accord was signed by Musabbeh Al-Kaabi, CEO of UAE Investments at Mubadala and Marco Alverà, CEO of Snam. The two partners agreed to pursue a number of joint assessment activities, including technical and economic feasibility studies to explore potential projects and solutions to foster and

promote hydrogen development in the UAE and globally.

Green gas accelerates the energy transition

"This agreement shows Snam's commitment to accelerate the energy transition and the development of green gases, more specifically, at global level by applying our skills and technologies to enhance the competitiveness of this key solution for the climate challenge," Snam CEO Alverà said,



Snam's FRSU Toscana meets about 4% of Italy's gas needs.

adding the Italian TSO is looking to strengthen its presence in the UAE and in the Gulf area.

"We will work closely with Mubadala leveraging our mutual know-how and investment capabilities to identify projects of common interest in the UAE and contribute to the development of a hydrogen-fuelled economy," stated Alverà.

Al-Kaabi said Mubadala was a responsible UAE and global investor and an active player in promoting greener energy. "We have long pioneered and championed a balanced energy mix through our investments in portfolio companies that are contributing to clean, affordable and resilient energy solutions in the UAE and abroad," he Al-Kaabi. "This signing with Snam is an extension of our joint efforts to develop a hydrogen economy for the UAE," he said, underlining the company's commitment to "advance the role hydrogen will play to meet future energy demand globally."

UK invests £3 million to turn Tees Valley into hydrogen transport hub

The UK government has committed to invest £3 million to kick-start the development of a hydrogen transport hub in Tees Valley – a process that could create up to 5,000 new jobs in the North East. If all goes to plan, the hub could be fully operational by 2025.

A first of its kind, the hub will bring together experts from government, industry and academia to focus research, testing and trials across all transport modes. Under the UK Department for Transport's plan, the hub is also meant to include a dedicated Research & Development (R&D) campus for the creation and sharing of knowledge.

Pop-up trials for hydrogen use

By creating real-world hydrogen transport pilots, the hub will help researchers understand the role hydrogen has in meeting the UK's 2050 net-zero ambitions. Pop-up trials could see shops, supermarkets, online retailers and delivery companies using hydrogen-powered transport to move goods and carry out last-mile deliveries.

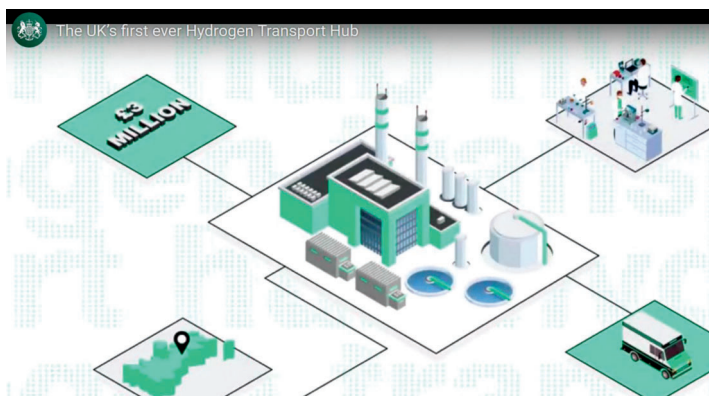
The findings of these trials will inform future investment decisions and may open up prime export opportunities for British companies. Transport Secretary Grant Shapps said: "The hub will establish the UK as a global leader in hydrogen technology, paving the way for its use across all trans-

port modes and propelling us towards our net-zero goals.

Further hubs on the cards

Hailing the green credentials of the North East in terms of offshore wind manufacturing, carbon capture storage (CCS) and hydrogen, Tees Valley Mayor Ben Houchen said: "Our region already produces more than 50% of the UK's hydrogen, so it was a no-brainer for the government to set up the UK's first hydrogen transport hub in Teesside." Looking ahead, he added: "Teesside has led the world in steel manufacturing and engineering for generations. Now we are leading the world in the industries of the future and creating clean, good quality, well-paid jobs in the process."

Markets observers are more critical. James Carter, UK Head of Energy and Natural Resources at the law firm DLA Piper, cautioned this is only the start of the government's 'build back greener' programme. "If the UK is to meet its net-zero carbon emission goal by 2050, and its aim to have 5GW of low-carbon hydrogen production capacity by 2030, far greater investment will clearly be required and additional hubs will need to be established," he said.



Scheme of the UK hydrogen hub

Salt storage builds add length to US Lower 48 gas balances

Withdrawals from US gas storage kept falling this week, with analysts attributing the storage build to mild weather in the South Central regions and subsequent rises gas injections into salt cavern storage. The South Central was badly hit by the mid-February 'Big Freeze' in Texas but temperate already sprung back to a 10% warmer-than-normal March to-date.

Prices for underground gas storage fell off a cliff with as advent of warmer weather reduced gas-burn for power generation and space heating. "Previously, ultra-flexible salt storage caverns pulled 2 billion cubic feet (bcf) this winter for every additional heating degree day (HDD) incurred beyond a baseline of 13 HDDs," analysts at the London-based consultancy Energy Aspects noted.

"This relationship, drawn up in graph 2, has broken down in the weeks since the Big Freeze though," analyst explained. The week ending 26 February saw salts inject 9 bcf on 19.8 HDDs, while the report through 5 March showed a salt build of 17 bcf on 11.5 HDDs, they noted.

Record injections to balance 50 bcf deficit

These days, operators of salt storage are packing in the gas to balance a 50 bcf year-on-year storage deficit in the wake of the 'Big Freeze' and analysts anticipate inventory levels in South Central will lag last year's levels by 96 bcf. The deficit comes after salt cavern gas storage reached a surplus of 65 bcf in October 2020, but levels are now approaching an estimate 35 bcf deficit by the end of March.

The higher regional storage builds are

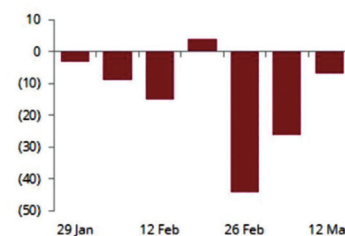
linked to lagging industrial demand. Flow data indicates Texas industrial demand averaged 4.7 bcf per day in the current week, well below the 6.0 bcf/d baseline from early February.

"While some of the decline is due to a lack of industrial heating demand, several PADD 3 refineries were still ramping up at the start of the reference week following weather shut-downs, including ExxonMobil's Beaumont and Baytown facilities," analyst said, adding: "There was also likely a push to boost overall South Central salt inventories, which remain at a five-year low of 197 bcf even after flipping to growth directly after the Big Freeze."

Spreads "less enticing" than in 2020

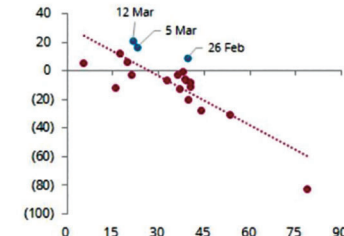
Injections into gas storage in South Central are likely to continue throughout the summer, and file to seasonal net withdrawals come peak summer in July–August. "Salts will have to do the bulk of their summer build in Q2 21

Fig 1: Bloomberg survey median vs. EIA report, bcf



Source: Bloomberg, Energy Aspects

Fig 2: Salt storage activity (bcf/d) vs South Central HDDs in 2020-21 heating season



Source: EIA, Weatherbell, Energy Aspects

given typical shoulder season low prices, though prices spreads are less enticing than they were last year," analysts commented.

In 2020, the gap between Henry Hub April realised cash and peak winter prices was \$1.30 per million British thermal units (MMBtu), driven by the uncertainty of when the pandemic's demand losses would end. Energy Aspect's current projection is for a \$0.55 per MMBtu spread between April 21 and January 22, seven cents wider than the current curve on our sub-3.5 trillion cubic feet (Tcf) end-October carryout.

"Current spreads will still encourage injections, but rising y/y demand in Q2 21 will add outlets for gas and reduce the incentive to grow storage compared to 2020," analysts concluded. ■

IGU President highlights role of gas and hydrogen as "enabler of energy transition"

Joe M. Kang, President of the International Gas Union (IGU), has highlighted the role of natural gas as an enabler in the energy transition. Speaking at the 50th GECF Gas Lecture Series, he criticised the "lack of a global approach" on how to ensure clean, secure and affordable energy given that "renewables cannot yet replace hydrocarbons."

The (climate change) debate in recent years has been intense and loud, but the world has not come far in aligning on an approach that enables us to meet the enormous challenges of decarbonisation, energy access and energy security.

"Renewables cannot yet replace hydrocarbons"

GECF Secretary General Yury Sentyurin stressed "there isn't a low-cost alternative yet for heating industrial buildings, producing electricity, cooking meals, riding a motor vehicle, transporting maritime cargo, boarding an airplane. The existing renewable energy sources like wind, sun, and water cannot yet sufficiently replace hydrocarbons."

Natural gas is abundantly available, and can in theory, complement the rise of fuels such as hydrogen, via blue hydrogen based on Carbon Capture, Utilisation, and Storage (CCUS) technologies, he noted.

In fact, the gas-burn in the power sector of OECD economies has enabled the phase out of coal and eased reliance on nuclear, whilst developing countries turn to natural gas to replace of coal, biomass and heavy fuel oil in power generation, industry and space heating. "While the OECD sharpens focus on how natural gas contributes to the transition, it is the fuel of choice to enable successful transitions in non-OECD growing economies that lead the global recovery," Sentyurin said.

Multi-phased approach

Different nations face different challenges: Hence the IGU is calling all governments to let energy industry innovators compete for how Net Zero Emission goals can best be achieved by a variety of means.

"No justice will be served if achieving the Paris targets involves actions that stymie economic growth and prosperity, or that deny billions of people access to much needed affordable energy and clean cooking fuels. Picking only electrical pathways will lead to lost opportunities, higher costs and a slower transition for millions of people," said Mr Kang, President of the IGU which has over 160 members across the entire gas value chain in 80 countries. ■

Cummins launches heavy-duty power train for gas customers

Cummins and Cummins Westport have launched the ISX12N+Endurant HD N powertrain for heavy-duty customers, combining a near-zero emissions gas engine and the Endurant HD N 12-speed automated transmission from Eaton Cummins. The solution is designed for lower emissions of regional haul fleets.

Technically speaking, the ISX12N is an inline, 6-cylinder, spark-ignited engine with a bore and stroke of 130×150 mm and a displacement of 11.9 L. The engine is available with a rating of 400 horsepower and 1,450 lb-ft torque, when paired with the Endurant HD N automated transmission.

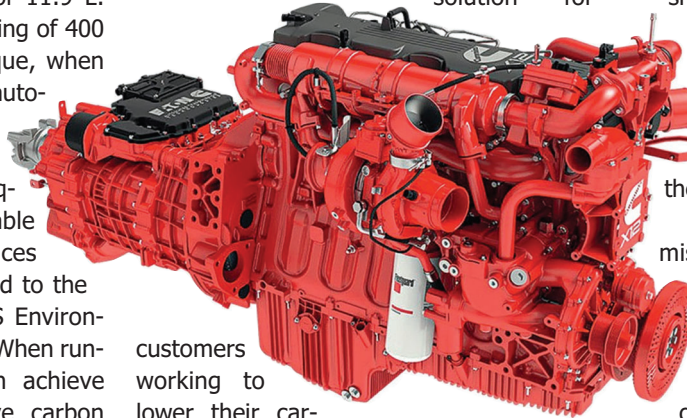
It can operate with 100% compressed natural gas (CNG), liquid natural gas (LNG) or renewable natural gas (RNG), which reduces NOx emissions by 90% compared to the current standards set by the US Environmental Protection Agency (EPA). When running on RNG, the system can achieve neutral or occasionally negative carbon index.

"The ultra-low emissions of the ISX12N combined with the Endurant HD N transmission provides the optimal powertrain solution for

ident of Cummins Westport. "The deep powertrain integration delivers improved launch, low speed manoeuvrability, and smoother shifts that drivers will appreciate."

Mr Hodek explained the new Endurant HD N transmission has been optimised to integrate the ISX12N gas engine. It features a new diaphragm spring clutch to meet the load requirements of the gas engine.

By integrating the engine and transmission devices, the operator can achieve a higher launch performance, improved low-speed manoeuvrability and smoother shifts when compared to previous natural gas engines and automated manual transmission combinations. ■



customers working to lower their carbon footprint," said Thomas R. Hodek, Pres-

Lloyd's Register develops non-conformance tool for oil & gas plants

London-based Lloyd's Register, classification society for ships as well as oil and gas infrastructure, has created a new tool for its users to track non-conforming oil and gas assets through to resolution. The tool not only identifies events but ensures that action is taken before issues become a tangible environmental, economic or safety threat.

The new tool was created in response to the oil & gas industry's complaint over a significant rise in the backlog of safety critical maintenance, compounded by the impact of the Covid-19 health and economic crisis, Lloyds Register explained. Operators had approached Lloyds Register, seeking a more streamlined way of managing instances of non-conformance.

Tracking anomalies to pre-empt errors The NCR update will now be able to track anomalies and non-conformance from creation, typically identified during inspection

activities, through to resolution, helping to drive efficiency, mitigate risk and reduce this backlog.

"For many years, resolving non-conformance has been an important yet resource-intensive challenge for oil and gas operators, often involving thousands of assets. By introducing elements of automation to this process, we can help to improve the efficiency of inspection and maintenance while also reducing the serious risks associated with non-conformance," said Victor Borges, Head of Digital Engineering

Content, Lloyd's Register.

"In future, the functionality could be expanded to provide a framework for tracking any number of different "events" from process upsets to managing small projects," he added.

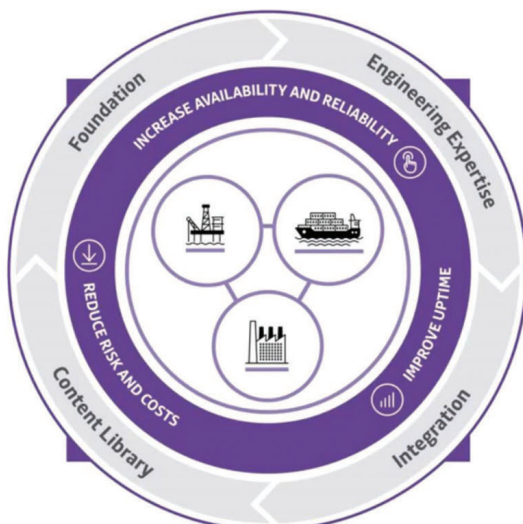
Centralised information, accessible by multiple users

The new NCRs reports are part of Lloyd Register's asset performance and risk management platform AllAssets. Users can access the update through pre-loaded templates and can design the entire NCR reporting process themselves using Lloyds Register's low code approach as well as industry experience and best practices gathered over decades.

Multiple users can be assigned to specific steps in the process, making it more transparent and allowing users to prioritize workload. All updates are collated into one central place to enhance visibility and allowing for information sharing across the organization as a whole. For example, this new functionality gives users an insight into insight into whether the event concerned may be associated with other technical issues in the past, or at related infrastructure. ■

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- Mass Risk Analysis
- Configurable Risk Matrix

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SAP
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Atlas Copco

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Europe needs to accelerate energy transition to hit 2030 climate goal

The European Union's 2030 emissions target of a 55% reduction over 1990 levels has made it the undisputed global leader in climate ambition. But the bloc is falling short of its goal, Wood Mackenzie warns, unless the rollout of electric vehicles and renewable build-out gets accelerated along with coal power plants retirements.

In its base case forecast, Wood Mackenzie sees Europe missing its climate targets by delivering a 46% reduction over 1990 levels, not the promised 55%.

Do everything, but quicker

Policies consistent with limiting global warming to no more than 2 degrees C would require that electric vehicles (EVs) and plug-in hybrids must reach 97% of the EU's passenger vehicle sales by 2030.

Wind and solar power generation capacity must grow by 162 GW and 253 GW, respectively, over 2020 levels – underpinned by rapid scaling of grid infrastructure. In addition, analysts stressed that coal-plant retirements of some 85 GW capacity by 2030, must be accelerated, and a greater carbon cost must be introduced in order to maximise coal-to-gas switching.

"However, even that 2-degree scenario only gets the EU to a 53% cut in emissions by 2030; it would take another two years to get to 55%," warned Murray Douglas, Wood Mackenzie Research Director. "To hit the 2030 target, Europe will have to do everything we have assumed, but quicker," he stressed.

Reform the EU-ETS to raise carbon cost

Given the limits to renewables build-out and EV penetration, European governments will have to push harder in three key areas: energy efficiency and the electrification of buildings, reducing the amount of travel, and reform of the carbon market.

The EU's Emissions Trading System (ETS) currently covers around half of the Europe's CO₂ emissions - any large scale expansion

of the scheme is unlikely, though maritime emissions and transport may be included. Still, the fact that ETS sectors will only deliver a third of the targeted reductions by 2030 underscores the need for reform.

In Douglas view, an ETS reform should provide investors with more certainty over the cost of carbon and make European industry aware that they are exposed to a carbon cost. This incentivises investment decarbonisation technology without increasing the risk of carbon leakage.

"Certainty over the cost of carbon by 2030 would accelerate coal phase-out plans, as it did in the UK. Renewable generation would be more competitive, and the array of projects would expand. The rapidly growing pipeline of low-carbon hydrogen projects would be bolstered, and the market would become more engaged in the development of carbon capture and storage (CCS)," he explained.

Gas demand set to stay resilient

Natural gas demand will remain resilient to 2030 amid a 55% emissions reduction, according to the report. Wood Mackenzie estimates that LNG will account for 27% of the EU's gas supply mix by 2030. Pressure to cut carbon and methane emissions will push LNG suppliers to reduce emissions from well to customer.

"For gas to secure a future beyond 2030, large-scale CCS must become a reality for gas-fired power and hard-to-abate industries," Douglas stressed. Investment by private capital chasing low-carbon opportunities will be key. "Governments will have to 'crowd in' private sector investment

with incentives," he said, noting such a formula has already delivered renewables growth, with feed-in-tariffs and guaranteed offtake underpinning returns for investors.

Responding to variable supply

"Some of the biggest opportunities will be in the build-out of wind, solar and storage capacity, which will require US\$585 billion of investment by 2030, and in the grid infrastructure needed to transform the electricity market," Wood Mackenzie forecasts, suggesting: "Europe must rapidly shift from a power market where centrally dispatched supply follows demand to one where demand can respond to an increasingly variable, weather-driven supply from renewable sources."

NEWS NUDGES

JERA donates ¥740 for decentralized energy project

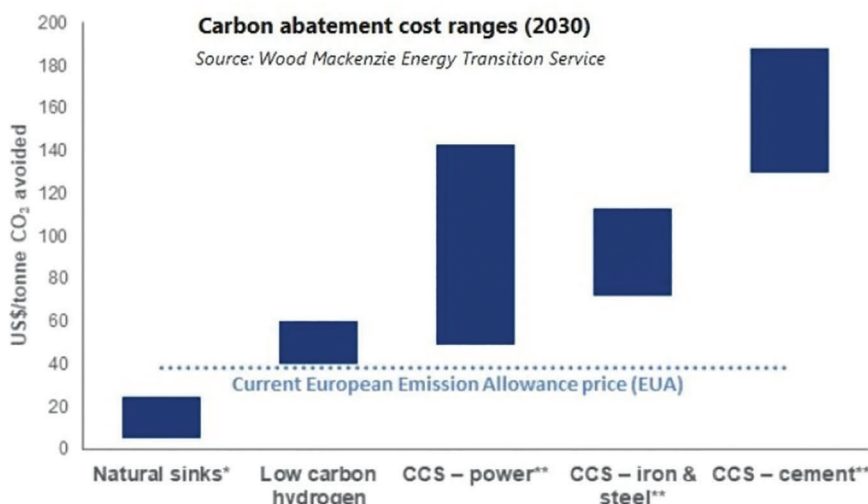
Japan's largest LNG importer and power producer JERA has donated 740 million yen (US\$6.80 million), to a decentralized power production and microgrid project in the town of Atsuma in Hokkaido. The town had entrusted JERA to carry out basic project planning December 2019 and March 2020, whereby a concept was developed for using locally-produced energy in its disaster management planning.

Gazprom and Shell extend cooperation

Royal Dutch Shell and Gazprom have extended their strategic cooperation by another 5 years. The heads of the companies, Ben van Beurden and Alexey Miller, said the future collaboration will focus on the decarbonisation of the European energy sector through natural gas and hydrogen, as well as on energy market research and the digitalization of technologies.

Kinder Morgan forms low-carbon business unit

Houston-based Kinder Morgan has formed a new Energy Transition Ventures group within the company, to identify and pursue commercial opportunities related to low-carbon energy projects. The team, lead by Jesse Arenivas, consists of a group of in-house financial, commercial and engineering professionals.



Siemens to supply eight topside modules for FPSO offshore Brazil

Malaysia's leading shipping line MISC Berhad has awarded Siemens Energy an EPC contract for eight topside modules that will generate electricity for gas processing and compression aboard an FPSO. The modules will be built across Asia and then shipped to South America, where they are due to start operating offshore Brazil in 2024.

MISC Berhad is building the FPSO to expand its fleet of 14 floating production systems. The FPSO is expected to have a processing capacity of 180,000 barrels of oil and 12 million cubic meters of gas per day.

The topside modules for power generation will be designed and manufactured across Asia, with engineering and execution activities done through Singapore, Siemens explained. Packaging for all the rotating equipment will take place at the company's Santa Barbara d'Oeste facility in Brazil, which will also service the FPSO's modules once deployed.

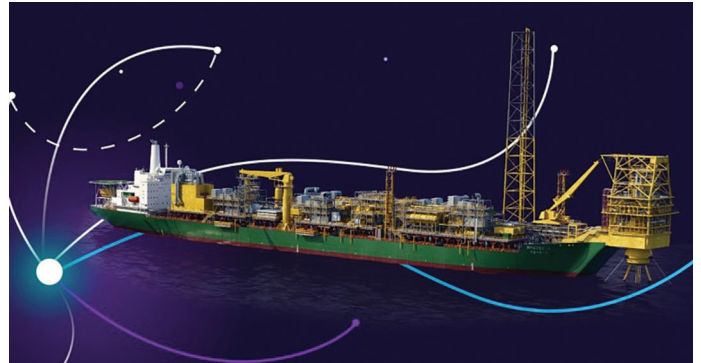
Siemens Energy's scope of supply includes the EPC work for all eight modules and several key components: two electric, low-pressure centrifugal compressors; two

electric, CO₂ compressors; three main injection compressors driven by SGT-A35-GT62X gas turbines; four SGT-A35-GT30 gas turbines for power generation; an E-house; plus all electricals including an electrical control and management system (ECMS).

Through the ECMS, the FPSO operator can monitor and supervise the power generation and distribution network for load management of the FPSO facility remotely. MISC Berhad can use the ECMS to monitor FPSO power, generate reports, and plan for

future sustainability.

"The order demonstrates our strengths and capabilities to transform FPSO operations to be more sustainable while fulfilling production requirements," said Thorbjørn Fors, Executive Vice President for Siemens Energy Industrial Applications. ■



Wärtsilä to convert Taiwanese power plant from HFO to natural gas

Wärtsilä will carry out a conversion of a Taiwanese power plant from heavy fuel oil (HFO) to natural gas under an EPC contract with the plant owner Ta-Yuan Cogen. Works are scheduled to start in 2021 and the converted CHP is expected to be completed in early 2022.

The CHP, situated in Taoyuan City, was originally equipped with three Wärtsilä-46 engines which will now be replaced with three Wärtsilä-50DF dual fuel engines.

Once upgraded, all electricity produced at the CHP will be delivered both to the grid, while the generated heat will be supplied to industries in the vicinity of the plant. Wärtsilä underlined the conversion will both improve the efficiency and operational flexibility of the plant and add 32 MW in power output.

By law, Taiwan's power utilities are required to generate 20% of their energy from renewables by 2025. For Ta-Yuan

Cogen, the conversion help to live up to this legal requirement; and it can utilize the greater flexibility of the CHP to integrate the inherently intermittent power supply from wind and solar power installations.

"Our company is committed to promoting cogeneration, improving energy efficiency to ease pressure on the domestic power supply, and to save environment. By converting this plant to operate on gas instead of HFO, we are endorsing this commitment. We have enjoyed a long-term relationship with Wärtsilä and appreciate their professionalism and expertise in planning this project," said Jeff Chang, President of Ta-Yuan Cogen.



aipower's CHP in Taoyuan City will be retrofitted with dual-fuel engines

Grid balancing solutions, provided by Wärtsilä, help utilities and grid operators in their efforts to reach 100% renewables future. The Finish OEM is heavily investing in the development of alternative carbon-neutral fuels, such as hydrogen, and most of its engines can already run on such, though they are not commercially available yet. ■

Six US utilities add EV fast chargers to link Atlantic with Gulf Coast

The Electric Highway Coalition – made up of American Electric Power, Dominion, Duke Energy, Entergy, Southern Co., and the Tennessee Valley Authority – plan to establish a network of electric vehicle (EV) charging stations to enable seamless travel between Gulf Coast, Midwest and Atlantic State destinations. Over 18 million EVs are estimated to be on US roads by 2030.

Though a rising number of drivers embrace EVs, many are concerned with the availability of charging stations during long road trips. With efforts like the Electric Highway Coalition, electric companies are demonstrating to customers that EVs are a smart choice for driving around town, as well as traveling long distances.

Sites along major highway routes are being considered with a view to determine final charging station locations. Charging stations will provide DC fast chargers that are capable of getting drivers back on the road in approximately 20-30 minutes.

"Dominion Energy is committed to equitable and reliable charging access so our customers may experience the benefits of electric transportation, including reduced carbon emissions," CEO Robert M. Blue said. ■



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