



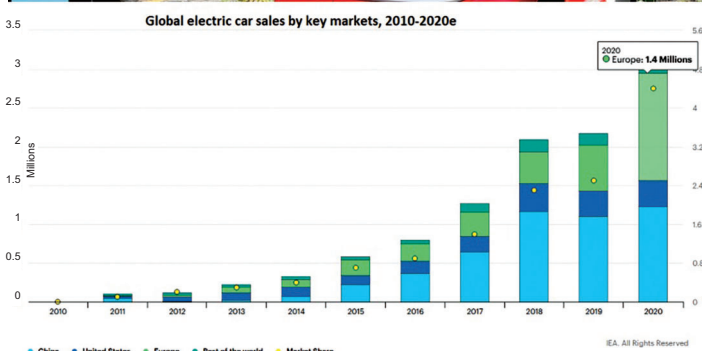
E-vehicle sales defy pandemic, exceed IEA's expectations in 2020

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

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

Purchase subsidies

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



for first 200 000 vehicles to €5,000 for the purchase of an electric vehicle, and to €3,000 for other cars.

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

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Sumitomo takes steps to source hydrogen from Australia and Oman

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

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

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

JSC Group said in a statement it "is making extensive efforts to expand the use of hydrogen energy which does not emit CO₂, when burned, as well as ammonia, which is expected to be one of the most promising hydrogen energy carriers in



hydrogen transportation, where there are issues from an economic and safety perspective." At the same time, the company is also working on producing produce hydrogen from synthetic gas made from waste plastics.

In the Australian state of Victoria, Sumitomo is already engaged in project to refine hydrogen form lignite for use as a transportation fuel. During the

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affluent households less affected by the economic downturn.

A year of two halves

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

India, Korea, the United Kingdom and the United States, despite second waves of the pandemic.

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

According to IEA analysts, "this suggests that car buyers have a continued attraction to electric cars."

Policies turn against petrol cars

Going ahead, the IEA pointed out the share of electric cars in global car sales must climb to around 50% by 2030 to be aligned with

a pathway to net-zero emissions by 2050. Several countries have already announced the full phase-out of internal combustion vehicles over the next 10-30 years.

Sales are likely to grow in Japan and Korea as governments increased subsidies, while China is trying to gradually phase out its support scheme for new electric vehicles by 2022. In the US, there are signs that the new Biden administration could prioritise fuel economy standards, promote charging station deployment, provide tax credits and help factories making internal combustion engine cars retool to make electric vehicles. ■

Siemens Energy to slash 7,800 jobs in effort to raise margins

Siemens Energy announced today it will cut 7,800 jobs, or 8.5% of its global workforce, to raise margins and improve competitiveness. Siemens Energy CEO Christian Bruch said most cuts would be implemented by 2023 with the aim of saving a minimum of €300 million in the Gas and Power segment.

The planned redundancies will affect 3,000 jobs in Germany, 1,700 in the US and 3,100 at other locations of Siemens Energy around the world.

"The energy market is significantly changing which offers us opportunities but at the same time presents us with great challenges," Bruch said. "We will undertake these measures in the most socially responsible way possible."

Gas turbine offering to be modified

Today, the Siemens Energy CEO presented a range of cost reduction measures related to external service providers, purchasing and logistics as well as streamlining of the company's IT landscape. The range of aero-derivative gas turbines on offer will be modified, and Siemens Energy will no longer

bid on contracts for new coal-fired power plants.

Material expenses will be scrutinised in particular and, in fact, most reduction measures are related to those costs. Optimised processes, leaner structures and the reduction of overcapacities are meant to boost margins but will also incur 7,800 redundancies in the Gas and Power segment – around three-quarters of those will be in management, administrations and sales.

Aspiring for over 8% EBITA margin

The overarching aim is to optimise the company's portfolio on the basis of profitability and future viability, to lower the non-conformance cost of major projects, and to reduce procurements cost. With these



measures, Siemens Energy wants to achieve an adjusted EBITA margin of 6.5% to 8.5% by 2023. The costs for the internal restructuring costs estimated to amount to a mid-to high-triple-digit million Euro range.

Cutting costs already helped Siemens Energy, spun off from Siemens AG in September 2020, to achieve a net profit of €99 million (\$119.53 million) in the first quarter of its fiscal year – a stark improvement on the €195 million loss incurred a year ago. ■

Gas to Power Journal

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pilot phase of the project, Sumitomo has been working with Kawasaki Heavy Industries, the Japanese utility J-Power, Iwatani and Marubeni as well as with the Australian power producer AGL Energy.

Grey hydrogen project in Oman

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

Commercial operation is scheduled to start in 2023, with the plan of producing 300-400 tonnes of grey hydrogen annually. The project's hybrid nature comes from an additional 20 MW solar installation on the site, so that part of the hydrogen is produced from a carbon-free power source.

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

Shell targets hydrogen, not renewables, as it shifts away from oil

Royal Dutch Shell has announced plans to use its expertise in energy trading to enter the growing market for hydrogen and biofuels as it shifts away from crude oil, rather than rushing to invest in renewable energy assets like some of its rivals. To fund its spending on low-carbon fuel sources, Shell wants to maintain its current level of oil and gas production.

BP, in contrast, said earlier it intends to reduce its oil production by 40% in the run-up to 2030 as it focuses on renewables and intends to increase spending on wind and solar power sources nearly ten-fold to \$5 billion over the coming decade.

At the heart of Shell's shift in strategy towards hydrogen lies its expertise in trading all types for commodities from oil to natural gas to electricity and its substantial retail network. Shell currently trades about 13 million barrels of oil a day, or 13% of global demand, and is a top trader of LNG.

"The future of energy is particularly bright for our marketing and our customer-facing businesses where we already have scale. So we will accelerate a growth plan which is already underway," Chief Executive Ben van Beurden said in October. He also provided some detail on how the oil major plans to narrow its oil and gas production to nine hubs, cut the number of refineries to six from 14 and boost its marketing and trading business.

Apart from its hydrocarbon output, Shell is also taking steps to increase its electricity supply business for homes and its network



of electric vehicle charging points. To that end, the company wants to add another 10,000 to its existing 45,000 retail outlets worldwide by 2025.

Biofuels are already produced by Shell, and the company is also venturing into the hydrogen. It is the lead developer of a hydrogen hub in Hamburg, Germany, and part of a consortium of several companies that are building hydrogen hub in Rotterdam in the Netherlands.

India fosters closer ties with IEA on renewables, energy efficiency

India has signed a strategic partnership with the International Energy Agency (IEA) that could make it a future full IEA member. In focus are renewables, energy efficiency, oil stocks and emergency preparedness, data and investment. The IEA also wants the Indian government to enhance electricity access for India's 1.4 billion citizens.

India's addition to the IEA family reinforces its influence on the group, while extending the reach of its work on energy security, electricity access and natural gas markets, commented the Seamus O'Regan, Canada's Minister of Natural Resources. Canada sees India as a prospective market for its LNG, though progress on liquefaction and export project has been sluggish amid low oil prices, rising rival supply and weak demand as economies recover from the pandemic.

Aiming for 450 GW renewables

In recent years, the government implemented a range of energy market reforms and deployed a huge amount of renewable energy sources, notably solar power. The stated aim is to produce 175 GW from wind and solar power sources by 2022, and increase that target to 450 GW in the future.

India also plans to increase the share of natural gas in the energy mix to 15% by 2030, from 6% today to improve the sustainability and flexibility of its energy system. India also made progress towards meeting the UN Sustainable Development Goals, as both the energy and emission intensities of India's GDP fell more than 20% over the past decade.

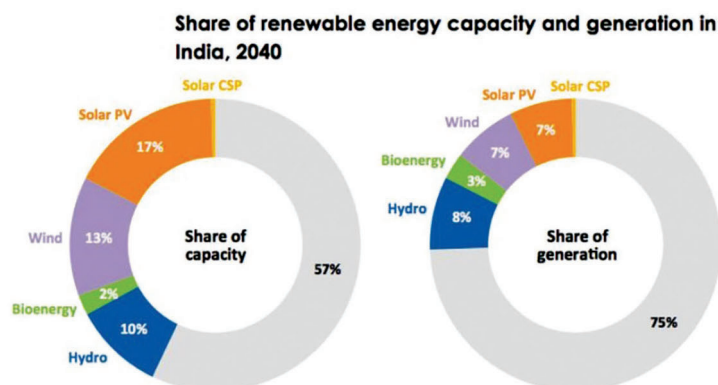
The Strategic Partnership Framework between India and the IEA was signed during a virtual ceremony, with senior representatives from India and IEA member countries in attendance. The economy ministers of Sweden, Italy and Japan voiced their support for India's move, highlighting the country's critical importance in shaping the world's energy and climate future.

Potential for hydrogen exports

Germany's economic minister, Peter Altmaier, also welcomed IEA forging closer ties with India, suggesting Europe will be able to "tap into a great potential for innovation

and sustainable growth." Germany's total exports to India in averaged 175,193 million Euros over the past decade, and the country ranks 15th for German mechanical engineering and energy-related exports.

The EU is pursuing an ambitious hydrogen strategy and India could emerge as a prime supplier for green hydrogen, produced renewable energy, to both Europe and Asia. India's geography and climate allow producing wind and solar power at a very low cost which could be used to produce hydrogen for export, opening up a novel source of revenue for India's hydrocarbon producers.



How India's energy mix looks in 2040. Image: IEA.

Solar PV and onshore wind have seen strong growth, overtaking for the first time investment in thermal generation in 2018. To reach 175 GW by 2022 and 450 GW, system integration becomes a priority.

Biden administration feared to halt key US gas pipeline projects

President Joe Biden has moved swiftly to reconfigure US energy policy, cancelling the Keystone XL oil pipeline on his first day in office and signalling to factor in emissions costs into project reviews. Analysts warn this could put projected key gas interconnectors at risk, notably the 2.0 Bcf per day Mountain Valley Pipeline meant to alleviate take-away constraints for supply from the Appalachian.

Analysts say a timely start-up of the interstate pipeline would help dent growing demand for natural gas in the U.S. Southeast. Set to transport shale gas produced at the prolific Marcellus and Utica Basins, it will provide up to two million dekatherms per day of firm transmission capacity to markets in the Mid- and South Atlantic regions.

If build along the proposed route, the Mountain Valley Pipeline will extend Equitrans' transmission system in West Virginia, to Transcontinental Gas Pipeline Company's (Transco) Zone 5 compressor station 165 in Pittsylvania County, Virginia. The controversial and delayed project is being developed by a joint venture of NextEra US Gas Assets, Con Edison Transmission, Equitrans Midstream Partners, WGL Midstream and RGC Midstream and project partners and already faced difficulties with the US Federal Energy Regulatory Commission (FERC) under the Trump administration.

Construction on a disputed stretch of the pipeline has been proceeding since September 2018, after FERC lifted a stop-work order. However, the regulator's recent vote on Equitrans' request to bore under streams in West Virginia, necessary to complete preparatory work for the pipeline, resulted in a deadlock 2-2 vote. Construction now cannot move ahead on even the first 77 miles of the total 303 mile pipeline.

Further delays likely

Analysts at Energy Aspects say "FERC's recent stalemate vote will delay Mountain Valley Pipeline beyond its currently stated in-service date in the fourth quarter of 2021, likely to the second half of 2022." Consider-

ing FERC did not reject the developer's request outright Equitrans still hopes the decision on cross-streaming will be revisited in the coming months.

But once President Biden will be able to nominate a new Democrat commissioner, the regulatory scrutiny of energy projects will increase, analysts warn. "The new US President has already elevated Democrat Richard Glick to FERC's chair, and he will be able to further reshape the commission when the term of Republican former chair Neil Chatterjee expires. When that seat flips to a Democrat, major gas infrastructure could be at serious risk of delays or rejections from the new FERC," write David Seduski and Ashwin Ravichandran, North America natural gas analysts at Energy Aspects, in a market roundup.

Shippers consider divesting capacity

Equitrans, the anchor shipper on the Mountain Valley Pipeline, holds 65% or 1.3 Bcf per day of total capacity. The company has already made plans to sell down its capacity on the pipeline as it expects to hold production flat year-on-year in 2021. The remaining 0.45 Bcf per day capacity on the pipeline is primarily held by utilities and marketers which, according to analysts, tend to fill the pipeline both "from a gas sourcing and Transco Zone 5-Dominion South spread realisation perspective."

Energy Aspects hence only anticipates 0.45 Bcf/d of organic growth in Appalachia production during heating season 2021-22 with Mountain Valley Pipeline being commissioned, with any further growth forecasts being delayed to the second half of 2022.

This change in Appalachia production forecast is, however, unlikely to affect the Dominion South basis until the first quarter of 2022 given there is still spare capacity in place.

Constraints during the Appalachia shoulder

season are, however, likely to persist through spring 2022, when the Dominion South basis is forecast to widen to a \$0.80-0.90 per MMBtu discount to Henry Hub from April 2022. Shale gas production from the Appalachian Basin is seen to remain range-bound within 1.5 Bcf per day of its current level from now until summer 2022, when the Mountain Valley Pipeline is likely to be commissioned.

"Even when the pipeline does come online, it is not expected to moderate Transco Zone 5 winter premiums, as Appalachia gas is flooded into an already constrained Transco mainline," analysts said but cautioned the moderating impact on Transco price premiums for hubs south of Station 195 will set in then the connecting MVP Southgate project will be completed in 2023. ■

Plan to wind down leases will hit supply from 2024

The US upstream industry fears the impact of the new Biden administration's plan to reduce the amount of leases granted on federal land will impact output from 2024, potentially propelling up oil and gas prices.

Energy Aspects does not foresee "any near-term impacts to gas production" from the President's executive order as fracking companies have approved permits in place to underpin production well into the second half of 2022.

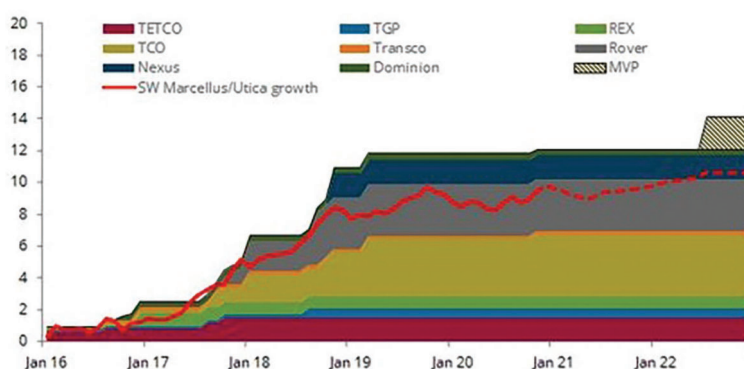
But beyond next year and certainly by 2024 the new production that would have come from federal lands will need to be replaced.

"A complete halt on new production from federal lands would effectively zero out the Gulf of Mexico, much of the New Mexico section of the Permian and a large chunk of Wyoming," analysts warned.

Much of Biden's new energy policy is still unknown, e.g. will existing permits be renewed beyond their standard two-year expiry, will federal offshore permits be treated differently.

Analysts expect the overall thrust of environmental policy shift "points to potential supply problems in a few years." Concerns about future shortages are starting to be reflected in Henry Hub prices, a few years down the curve. ■

SW Marcellus/Utica production vs takeaway capacity, bcf/d



Source: Company filings, FERC, Ventyx, Energy Aspects



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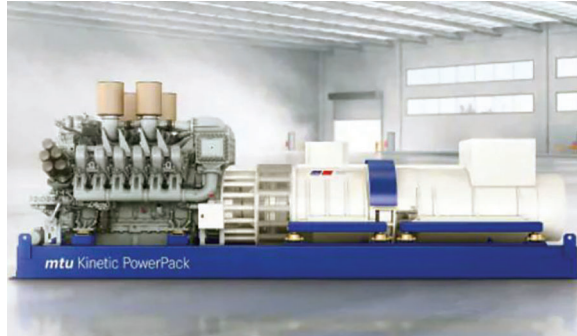
Rolls-Royce expands its product range with Kinolt UPS systems

The British manufacturer Rolls-Royce has expanded its portfolio of MTU engines to include uninterruptible power supply (UPS) systems, based on Kinolt technology. Rolls-Royce bought Kinolt in 2020 and is marketing the firm's flywheel energy storage and power supply systems under the name mtu Kinetic PowerPacks from February 1.

For especially installations such as data centres, hospitals or industrial plants with sensitive production processes, mtu Kinetic PowerPacks provide "continually high energy quality and eliminates 'parasitic' effects on the power grid," the manufacturer said. In the event of power grid failure, the system safeguards the electricity supply to critical infrastructure without loss in voltage.

Using flywheel energy storage and modern diesel engines, the system combines the functionality of uninterruptible power with emergency power supply.

"As compact UPS systems, mtu Kinetic PowerPacks represent a substantial addition to our range of practice-proven emergency power gensets," said Andreas Görtz, Vice President Power Generation, Rolls-Royce Power Systems. "We can now offer our customers complete energy security solutions that are extremely economical in terms of



both acquisition and operating costs, for their safety-critical installations."

Kinolt, based in the Belgian city of Liège and founded in 1984 as Euro-Diesel, has been well established as a leading manufacturer for uninterruptible, dynamic power supplies. The business, formerly known as Kinolt S.A., has been trading as Rolls-Royce Solutions Liège SA since 1 February 2021.

Rolls-Royce will gradually incorporate Kinolt's sales and service into its Power Systems service organization. According to Görtz, this streamlining will give customers access to an "even closer network." ■

Siemens Energy sets up Innovation Center in Shenzhen, China

Siemens Energy has launched an innovation center in Shenzhen with a focus on smart energy, advanced gas turbine and green hydrogen. Benefiting from the local industrial base and talent pool in the Guangdong-Hong Kong-Macao Greater Bay Area, the center strives to scale-up of and commercialise research results.

The three labs at the center are tasked to localize advanced technologies, conduct further research and set up pilot and demonstration projects. The aim is to be an open and inclusive platform, working on core gas turbine technologies, hydrogen co-firing and other novel low-carbon energy sources. Researchers will work with local industry and government, to promote public education and international exchange in the field of green energy.

Working with Shenzhen Energy

To support these R&D initiatives, Siemens Energy also opened a branch office in Shenzhen and signed cooperation agreements with local district governments, Shenzhen Energy and Shenzhen Leaguer Group. No further details about were disclosed about the cooperation with local power producers

and suppliers. "A reliable, efficient and low-carbon energy supply system is key to building up Shenzhen as the new frontier of high-quality development and the Greater Bay Area a world-class city cluster," said Vinod Philip, Chief Technology and Strategy Officer at Siemens Energy. "Together with our partners, we will make real-term contributions to China's ambition of carbon neutrality by 2060"

Creating new technologies

Christian Bruch, CEO of Siemens Energy pointed out that to manage the energy transition, companies need to form global partnerships, modernise conventional technologies to become effective interim solution and develop even more innovative green technologies. In fiscal 2020, Siemens Energy spent €985 million on R&D. ■

Wärtsilä and Huaneng develop green power solutions in China

Wärtsilä and Huaneng Jiangsu, part of China Huaneng Group – one of the country's largest utilities, have agreed to jointly develop sustainable power solutions. The aim is to enhance internal combustion engine (ICE) technology to integrate more renewable energy into the grid in Jiangsu province, north of Shanghai.

The strategic deal between the two companies aligns with China's energy security policy of "four revolutions and one cooperation" and is part of a wider EU-China cooperation on energy. The strategy's four revolutions are intended to curb energy consumption, diversify energy supply, upgrade generating technology, and speed up energy sector development, while final aspect refers to strengthening international cooperation to enhance energy security under open and transparent conditions.

ICE help regulate grid frequency

Cao Qingwei, Chairman of Huaneng Jiangsu said working with Wärtsilä will allow the Chinese power company to take advantage of market opportunities in ancillary services, such as frequency regulation and peak shaving in Jiangsu province. Implementing more internal combustion engines into the grid, in his view, "will help China to accelerate its transition towards clean energy."

For Wärtsilä, the cooperation agreement marks a positive step for the rollout of flexible ICE technology in one of the world's fastest growing power markets. The company has put substantial R&D efforts into improving its combustion engine technology which resulted in a high engine efficiency of up to 50% in single cycle mode, depending on the engine type. ■



Signatories at the launch of Shenzhen Innovation Center

GE commissions 650 MW gas-fired CHP in China, replacing coal unit

General Electric has commissioned the Junliangcheng combined heat and power (CHP) plant that covers the electricity and district heating needs of over 100,000 citizens in Tianjin, China's third largest city. The 650 MW cogeneration plant, powered by GE equipment, was built in replacement of a coal-fired unit to help achieve the government's emission targets.

China's fast-growing manufacturing industry and mass migration into centrally heated cities, have increased the country's demand for energy and heat. The government hence put in place targets to shut down ageing coal-fired power stations in major urban areas or convert them to natural gas to reduce air pollution. President Xi Jinping recently renewed his pledge to have China's emissions peak CO₂ before 2030 and achieve carbon neutrality before 2060.

The new Junliangcheng cogeneration plant, owned by China Huadian Tianjin Junliangcheng Power Generation, part of China Huadian Corp (CHD), features the first commercially operating GE 9HA.01 technology in China. In addition, GE supplied its Mark VIe distributed control solution while Harbin Electric-provided the steam turbine, generator and balance-of-plant equipment.

"At China Huadian, we're committed to accelerating the modernization of our power plant assets in alignment with China's national emissions reduction goals. Coal-to-gas switching is an effective and rapid method to reduce emissions," an executive of China Huadian Corporation said. "We have been working with GE since 2014 and we put our trust in GE's record-setting HA technology," he added.

HA gas turbines can achieve up to 62.22 % fuel efficiency in combined-cycle operation, as proven at GE's first HA turbine project at an EDF-owned power plant in Bouchain, France. Combined cycle plant emit only half of the CO₂ emissions of a similarly-sized coal plant, and less pollutants like mercury, NO_x, SO_x and particulate mat-



Junliangcheng CHP in Tianjin, Hebei province

ter. Moreover, GE's H-Class gas turbines are capable to run on up to 50% hydrogen when blended with natural gas, offering a path to lower emissions further. ■

Odfjell retrofits drilling rigs with Siemens' BlueDrive DC grid system

Norway's Odfjell Drilling has decided to retrofit its deepwater, semi-submersible rigs in the North Sea with Siemens Energy BlueDrive DC-grid system to minimize rig emissions. The upgrades will be carried out first on Deepsea Atlantic and Deepsea Nordkapp, and may extend to rigs off Stavanger and Aberdeen at a later stage.

The upgrades push the boundaries for conventionally powered offshore rigs and set a new technological standard in Odfjell Drilling's strategy towards zero-emission drilling. Chief Technology Officer, Per Lund, said Odfjell was "looking for the most efficient approach to minimize emissions from a rig in the short term."

Designed for propulsion systems

BlueDrive DC-Grid technology solution consists of DC/DC converters that are connected to the existing four drilling drive DC buses from one side, and from DC/DC converters to energy-storage systems. This allows rig operators to conduct peak shaving of drilling loads, so fewer generator sets can run at higher and steadier loads — reducing fuel consumption and carbon emissions. ■



Render of BlueDrive DC grid system

The scope of the work, awarded to Siemens Energy, results from several months of technical and operational clarifications to ensure the rigs' optimal functional profile. The long-term cooperation between Odfjell Drilling and Siemens Energy also includes several R&D initiatives related to power from shore or nearby platforms and floating offshore windmills to fixed platforms or rigs. ■

Wärtsilä helps balance Shetland's power supply

Scotland's Shetland Islands are relying on Wärtsilä to provide grid balancing services and reserve power through an energy storage system. Once operational, the system will deliver 8 MW/6 MWh of electricity and will be managed by Scot141.5tish and Southern Electricity Networks (SEN), part of the UK's largest utility SSE.

The system will be installed at the Lerwick power station in the island's capital city. This power plant is the main source of electricity for the local grid and Wärtsilä's energy storage unit will provide spinning reserve capacity. Dispatch of the energy storage will follow load requirements on the grid, prioritizing the use of wind power to help save fuel and reduce carbon emissions.

Start-up in September

Wärtsilä will supply the energy storage full engineering, procurement, and construction contract. The system includes the company's GridSolv Max product that provides modular storage.

"The GridSolv Max energy storage solution will support the power station's spinning reserve functionality and can provide black start back-up," explained Wärtsilä's business development manager, Bent Iversen. The overall system will be delivered by mid-summer this year and is due to start operations in September. ■

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