



Fitch expects European power prices to soar above €200/MWh

High gas prices, combined with electricity supply imbalances due to coal plant closures and a strong rebound in demand are propelling up power prices. Fitch Ratings expects prices will soar to well above €200/MWh in some major European markets, vs €120/MWh on average last year and a slight drop in prices is deemed unlikely before 2023.

For most integrated utilities, however, today's elevated and extremely volatile power prices should have only a limited impact on earnings in 2022. "This is because hedging policies, which for many utilities cover close to 100% of their production this year, have made their EBITDA much less sensitive to merchant power," analysts explain.

Moreover, most utilities turned away from merchant power in recent years by expanding their supply from long-term contracted renewables. As a result, Fitch anticipates more earnings upside in 2023 for power generation companies, since they benefit from better strike prices on their futures hedging. But hedging positions are generally below 50% of volumes for 2023.

A temporary surge in coal-burn in the power sector could help reign in soaring electricity prices as long as enough alternative gas supply can be secured and imported.



Brace for taxes on windfall profits

Looking ahead to 2023, analysts see the risk that political intervention – especially through new special energy taxes – could eat into any windfall profits.

Europe's strong political push to diversify away from Russian gas, as set out in the EU's recently published REPowerEU proposal will likely lead to a pronounced longer-term decrease pipeline gas imports from Gazprom – with strong ramifications on spot gas prices.

Prices at the TTF, Europe's benchmark gas trading hub, will have to be sufficiently high to redirect LNG cargoes from Asia to Europe. "The extent of the supply shock will influence how quickly the market can rebalance in 2023 and beyond."

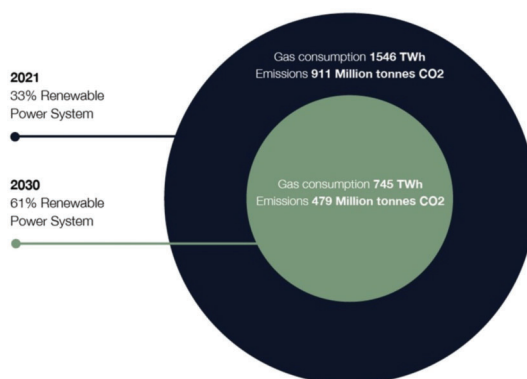
continued on page 2

Europe can halve gas-burn and save €323bn through rapid RES build-out

Gas-burn in the European power sector could be halved and fuel costs curbed, if electric generator rapidly scaled up their renewable capacity. Modelling by Wärtsilä shows that investment to deliver up to 80 GW per year of renewables, backed by balancing technologies, would help electric generators save €323 billion (\$356bn) in fuel costs by 2030.

The ambitious approach sees the share of renewable energy sources (RES) in electricity generation rise from around 33% today to over 60% by 2030, with the lower fuel costs helping to reduce electricity bills by up to 10%, potentially. But to provide baseload power, wind and solar must be deployed alongside energy storage or balancing gas-gensets that can run on sustainable fuels.

Adding 80 GW of renewable energy capacity per year, would lower gas-burn for power generation by 52% across the continent by 2030. This helps avoid 5,456 TWh of gas consumption, equivalent of 3.5 years of Russian gas supply to the EU – a strong move towards energy independence.



Europe can halve power generation emissions and gas consumption by installing 80GW of renewable energy per year before 2030.

continued on page 2

AGENDA

RISK

Gas rationing on the cards in Germany

2

SUPPLY

Brisk halt in Russian gas imports could plunge Europe into recession

3

HYDROGEN

GE converts Uniper's Grain CGGT to run on 40% hydrogen

5

Mitsubishi to co-fire turbines with 30% hydrogen blend by 2025

5

ENERGY STORAGE

Vulcan Energy to supply battery makers with CO2-neutral lithium

7

EMISSIONS

CO2 emissions rebound as world economy relies on coal to power growth

8

Continued from page 1, top story

Heightened supply risk

Though Russian gas flows to Europe are continuing and have not been placed under EU sanctions, the risk of physical damage to gas pipeline infrastructure going through Ukraine cannot be ignored. In 2021, about 40 bcm of the total 142 bcm of Russian gas exports to the EU-27 was transited through Ukraine.

Alternative supply is hard to come by. The LNG pool available for spot sales is limited,

and most global LNG production is locked into long-term contracts (many with destination clauses). No large additional global liquefaction capacity is expected to come to the market before 2025.

The potential for alternative additional gas supplies from Norway, North Africa, or Azerbaijan appears low, hence Fitch analyst expect gas prices in Europe to remain highly weather dependent. Markets will take longer

to rebalance due to the EU's request to refill gas reserves to 90% of storage capacity by October 2022, from about 26% as of mid-March.

In the long term, the shift to green energy sources and hydrogen is hoped to reduce Europe's natural gas demand. Together with additional LNG imports, analysts expect this should eventually balance the market after 2025. ■

Gas rationing on the cards in Germany in rouble standoff with Russia

Germany's energy emergency plan, activated today, could see the government ration electricity use if Russian gas supplies will be disrupted or halted over a dispute on payment terms. Markets are anxious as to whether the Kremlin will insist on rouble payments, and German year-ahead power prices soared 6.3% to a three-week high of €185/MWh.

Bracing for potential supply disruptions, the German economy minister Robert Habeck enacted the 'early warning phase' of a pre-arranged gas emergency plan. From today, a carefully selected crisis team with members from the economy ministry, the energy regulator BNetzA and industry will monitor the level of both gas imports and storage.

Eager to reassure consumers, Habeck told a news conference Germany's supplies were safeguarded – at least for now – but

he pleaded to industry and households to reduce consumption, stressing that "every kilowatt-hour counts."

Bracing for a decline in Russian gas supplies, the German energy regulator BNetzA has already discussed the criteria for curtailing supply to large industries and power generators with the economy ministry and related industry associations. Large industries were asked to specify their power and gas needs in anticipation of possible shortages next winter.

If imports fall below a certain threshold, the regulator can now ration supplies to industry in a first instance while households, hospitals and critical infrastructure remain protected. German steel companies consume around 2.1 billion cubic metres of natural gas per year – both for heat generation and steel processing –, while the country's entire industry uses 38 billion cubic metres.



Hunt for alternative supplies

German economic minister Robert Habeck has been on a mission to secure alternative supplies. Travelling to Qatar, he entered an energy partnership with the emirate which paves the way for LNG importers to fine-tune contract details. Beforehand, he visited Norway to pledge for more pipeline gas deliveries.

Qatari LNG cargoes could soon berth and discharge at the Brunsbüttel regas terminal. The 8 billion cubic meter per year (bcm/y) project has been long in the making: First proposed in January 2017 by the Dutch Gasunie, the €450 million venture only gathered momentum after Russia's invasion into Ukraine – when Germany understood the urgency for diversifying gas imports. If all goes to plan, first LNG cargoes could be landed at Brunsbüttel in early 2024. ■

Continued from page 1

Turn away from baseload fossil fuels

Wärtsilä's modelling of 33 European countries – including 27 EU member states, plus UK, Norway, Switzerland and the Balkans – shows that if renewables are scaled up to 50% of the capacity mix by 2025, then Europe could save € 98 or \$108 billion in energy costs.

Two scenarios were modelled for Europe energy transition: The baseline scenario, based on the IEA's Renewables 2021 statistics, shows European countries adding 40GW of new renewables capacity every year until 2030. That is the level of deployment currently seen in Europe, which would achieve a 50% share of renewable power by 2030.

A more ambitious scenario assumes dou-

bling the renewables build-out to 80GW per year, to reach 61% renewable power by 2030. Carbon emissions are also halved in under the ambitious model, from 911 million tons of CO₂ in 2021 to 479 mt CO₂ in 2030, equal to nearly the annual carbon footprint of the UK.

"Cutting Europe's dependence on expensive baseload fossil fuels and increasing energy independence need not cost more for power companies or energy consumers. Accelerating the transition to a clean energy system could save €323 or \$356 billion by 2030 compared to continuing the current pace of renewables growth," said Sushil Purohit, President at Wärtsilä Energy and EVP. "That is why we are calling for fast decisions to accelerate renewables and tackle the energy price crisis." ■

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

Brisk halt in Russian gas imports feared to cause a recession in Europe

Suddenly stopping all energy imports from Russia would plunge Europe's economy into recession, German Chancellor Olaf Scholz warned. Defying criticism about the EU's slow reaction, he said the bloc is unprepared for an embargo which would have "incalculable consequences" – though German authorities and power generators already discuss a shutdown sequence in case of an emergency.

Germany's dependence on Russian oil, coal and gas imports had increased over decades, but the government would now end it "as quickly as we can", Scholz told Parliament. Sanctions implemented so far must not hit the European states harder than the Russian leadership, he said, stressing "it serves no one's interests if we are willingly putting our economic substance at risk."

Rush to renewables and energy storage

Renewables combined with energy storage and energy efficiency are the "only sustainable reaction" to energy dependence and high prices, the Chancellor stressed. Securing alternative gas supply and scaling up a hydrogen economy will help improve Germany's energy security in the short-term.

An outright embargo on Russian energy imports is not on the agenda currently, as Germany is still far off the point of being energy-independent enough to think about it. German steel companies alone consume

around 2.1 billion cubic metres of natural gas per year – both for heat generation and steel processing – while the country's entire industry uses 38 billion cubic metres.

Feverish hunt for alternative supplies

German economic minister Robert Habeck has been on a mission to secure alternative supplies. Travelling to Qatar, he entered an energy partnership with the emirate which paves the way for LNG importers to fine-tune contract details. Beforehand, he visited Norway to pledge for more pipeline gas deliveries.

Qatari LNG cargoes could soon berth and discharge at the Brunsbüttel regas terminal. The 8 billion cubic meter per year (bcm/y) project has been long in the making: First proposed in January 2017 by the Dutch Gasunie, the €450 million venture only gathered momentum after Russia's invasion into Ukraine – when Germany understood the urgency for diversifying gas imports. If all goes to plan, first LNG cargoes could be landed at Brunsbüttel in early 2024. ■

“

Sanctions implemented so far must not hit the European states harder than the Russian leadership ... it serves no one's interests if we are willingly putting our economic substance at risk.

”

- German Chancellor Olaf Scholz



Russian gas trunklines to Europe



US and Japan pledge to deliver more LNG to Europe

The United States has promised to deliver at least 15 bcm of LNG to the EU this year to support the bloc's energy security. In return, the Commission will work with European market operators to pool demand for additional US LNG until at least 2030. Japan also considers diverting more cargoes to Europe if Russia lowers supplies.

US President Joe Biden said American LNG exporters would ship additional volumes to Europe this year, with increases beyond 20 bcm possible in the years ahead. In return, European Commission President Ursula von der Leyen said she will work with EU gas market operators to pool demand through a newly established EU Energy platform to ensure a large, stable market for additional US LNG in until at least 2030.

Japan is considering diverting additional LNG cargoes to Europe from April, government officials said after a meeting in Brussels. In March, Japan had already offered its surplus LNG cargoes to the EU to alleviate the bloc's gas crisis after Russia lowered supplies. Shifting to green energy sources, both sides now want to cooperate on hydrogen.

In March, Japan is understood to have diverted several hundred thousand tons of LNG to Europe and promised additional cargoes for April – much needed relief for the tight EU gas and power market.

"Considering the severe shortage of LNG in Europe, we've decided to offer our cooperation following a request from the United States," Japan's trade minister Koichi Hagiuda told reporters. "We will ensure there will be stable supply in Japan, and offer the surplus to Europe." ■



Your reliability shines

MAN Energy Solutions
Future in the making

Energy & Storage solutions expertise

Securing energy supplies

Ensuring a reliable power supply is one of the key factors for progress and prosperity around the world. Building on decades of MAN innovation, we can help secure clean and efficient energy supplies for your customers. Our expertise covers solutions for hybrid power, LNG to power, energy storage, power-to-X, thermal power plants, and CHP.

www.man-es.com

Experience our solutions expertise

GE converts Uniper's Grain power station to co-fire up to 40% hydrogen

GE has started to assess the hydrogen readiness of Uniper's combined-cycle power plant (1,365 MW) on the Isle of Grain, UK. The gas-fired plant will run on hydrogen blends up to 40% by volume, once all existing GT26 turbines are modified to accommodate the zero-emission fuel. The aim is to decarbonise the Grain CCGT in the 2030s.

Working with the plant operator Uniper, GE will define how the combustion chambers of the GT26 turbines need to be amended to accommodate hydrogen fuel blends of significant volumes. Several engineering and consulting teams across GE's sites worldwide will support the assessment in a cross-functional effort.

Power generators worldwide are rushing to reduce the carbon footprint of their fossil power stations in response to more stringent emissions rules, with Uniper as well as many others opting for blending hydrogen with natural gas.

"We set the strategic goal of carbon-neutrality in our European generation by 2035, and this project marks a tangible step to-

ward the decarbonisation of our gas assets," said Ian Rogers, Uniper Head of Asset Improvement and Making Net Zero Possible project. "The assessment will provide us with the scope of the upgrade needed to support operation of up to 40% hydrogen by volume, while maintaining both plant economics and reliability."

GE is working to advance its gas turbines towards near zero-carbon power generation and seeks to modernise existing CCGTs through hydrogen co-firing. Martin O'Neill, VP Strategy, GE Gas Power pointed out: "Our

collaboration with Uniper in support of their efforts to achieve carbon neutrality across their European generation will also bring us closer to the UK's net-zero target and help us support the energy transition."



Uniper's H2-ready power station is near the Grain LNG import terminal

Mitsubishi strives to run turbines on 30% hydrogen blend by 2025

Mitsubishi Power is working to make its gas turbines run on a 30:70 mix of hydrogen and natural gas as soon as 2025. This technology change is triggered by the EU Taxonomy for Sustainable Activities, requiring power generators to co-fire gas turbines with least 30% hydrogen from 2026, with the ratio rising to 50% by 2030.

Switching to mixed gas-hydrogen generation means European gas power plants can remain compliant and keep operating in the years to come. "That way, operators can maximize the lifetime of their equipment and see a better return on investment (ROI) from their gas facilities," commented Professor Emmanouil Kakaras, head of MHI's branch in Duisburg.

Hydrogen can also serve to store excess renewable energy. Today, surplus electricity from wind and solar energy often goes unharvested, which is a "huge waste," he said, suggesting "conventional batteries will not be able to solve this problem any time soon."

Yet this excess renewable energy could be used to create hydrogen, which can then be stored until demand peaks or there is insufficient wind or sun to generate power. At which point it can be used in mixed gas-hydrogen turbines, and eventually, pure hydrogen turbines, to generate electricity without producing significant emissions, he explained.

IPP to run on green hydrogen

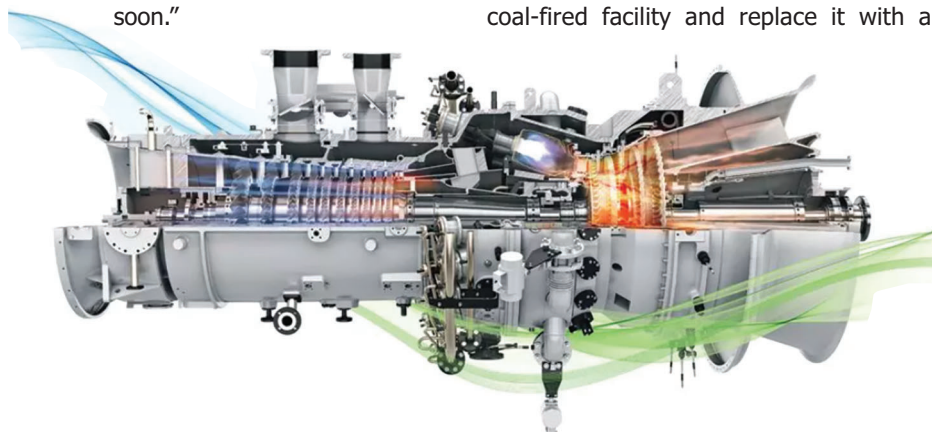
This idea is being put into practice at the Intermountain Power Plant (IPP) in Delta, in the US state of Utah. The plant operator, Intermountain Power Agency, will retire the coal-fired facility and replace it with an

840 MW gas combined-cycle plant in 2025, capable for hydrogen co-firing.

This new plant will be powered by two M501JAC turbines, using renewable power to produce hydrogen through electrolysis, with the hydrogen being stored in an underground salt dome at the site. These J-Series gas turbines will be commercially guaranteed capable of blending 30% green hydrogen at start-up, with plans to increase hydrogen utilization to 100% by 2045.

The high efficiency rating of Mitsubishi J-Series gas turbines already reduces carbon emissions of fully gas-fired plants by 65% compared to coal-fired units. With 30% hydrogen in the mix, that reduction rises to approximately 75%, Kakaras pointed out.

The Japanese manufacturer is currently working to develop turbines capable of running on 100% hydrogen, due to be available commercially by 2030. These turbines will also be demonstrated at the planned Takasago Hydrogen Park – the world's first centre dedicated to proven hydrogen-related technologies. The park will be co-located with the gas turbine development and manufacturing facility of MHI Takasago Machinery Works.



Cross section of H2-ready gas turbine



CLEAN & SUSTAINABLE COOLER BY DESIGN[®]

Chart is at the forefront of the transition

to a low carbon future through technology, equipment and services delivering hydrogen, LNG and biogas for energy and transportation. Our carbon capture technology also removes harmful pollutants including SO_x, NO_x and mercury.

www.ChartIndustries.com
LNG@ChartIndustries.com

CHART
Cooler By Design.®

Vulcan Energy to supply battery makers with CO₂-neutral lithium

Start-up Vulcan Energy will produce carbon-free lithium from geothermal power in Germany from 2024. Lithium prices soared by over 600% in less than a year, as the component is irreplaceable for e-car batteries and stationary power storage. Today, four-fifth of battery-quality lithium comes from China but Vulcan will sustainably produce it near Karlsruhe.

Manufacturing critical components locally is top of the agenda of EU policy makers since the pandemic disrupted supply chains, and Russia's invasion into Ukraine prompted a shift from fossil-based power generation to renewables and energy storage. Lithium is an irreplaceable component in lithium-ion batteries – the most widely used form of energy storage today.

Facing tremendous growth, demand for lithium will rise six-fold before 2030 driven by e-mobility and energy storage. Europe alone is estimate to consume around one million tons of lithium chemicals per year by 2030, which would be three times today's global market size. Volkswagen, Renault, Stellantis and Tesla are building giga-factories for e-vehicles, turning Europe into the second largest battery market in the world after Asia.

Producing lithium is not a sustainable process. Historically, it has been mostly been extracted in Chile and Argentina where a salty ground-water was stored in evaporation ponds, a lengthy process consuming large quantities of water in some of the driest places on earth. Today, lithium is mostly extracted as a rock from open pit mines in Australia and then exported to China to be refined into a lithium chemical.

Producing geothermal energy and lithium

Around 80 to 90% of the lithium used in Europe comes from China – but Vulcan Energy wants to change that: The German-Australian company aims to produce both renewable geothermal energy and lithium hydroxide from the same deep brine source in the Germany's Upper Rhine Valley. To that end, a geothermal power plant has been set up in Insheim, near Karlsruhe, where Vulcan also has four exploration licenses for

lithium and geothermal energy production.

Lithium, found in the Upper Rhine Graben, is dissolved in thermal water in underground reservoirs. Special sorbents, attracting these lithium ions, are used to extract the material from the thermal water which is then returned into the natural reservoir.

The energy for extracting lithium comes from the heat of the thermal water, which will also be used to produce electricity to power the pumps of the geothermal system and lithium extraction. Any excess energy will be sold to the grid. "The use of geothermal energy makes our lithium-extraction climate-neutral," Vulcan underlined.

Production slated to start in mid-2024

Since its inception in 2018, the Zero Carbon Lithium venture has made substantial progress. Following an investment of around €1.7 billion to build this asset, Vulcan Energy raised more \$320 million last year to finance the development of the project.

Eager to ensure stable returns, Vulcan Energy has signed long-term lithium supply agreements with five key players including Volkswagen, Renault Group, Stellantis, and Umicore. Vulcan underlined it is actually the only project in Europe to have fully allocated its first 5 years of productions to non-Chinese tier one off-takers.

Looking ahead, the Australian and German listed company wants to expand its production of both lithium and geothermal energy in the Upper Rhine Valley to help the European industry to de-risk its supply chain. ■



Storing excess renewables energy will make Europe 'truly independent'

Rapid renewables build-out, paired with energy storage, is seen as the only way to make Europe truly energy independent. Some 420 GW of additional solar PV capacity could be deployed in the EU by 2030, balanced by flexible gas power units, with excess energy stored for later.

Faster permitting of wind and solar power projects, incentivising industry to electrify their processes, and creating power purchase agreements (PPAs) to finance renewables projects are all part of the European Commission's RePowerEU strategy.

Energy storage, meanwhile, can shift energy from when it gets produced to when it is demanded, hence the industry association EASE says it "must be a pillar of an energy secure, decarbonised Europe."

Relying on flexible gas peaking plants to back-up intermittent electricity supply from renewables, in contracts, will cement the use of fossil fuels in the European energy mix at a time when gas prices continue to rise. Without enough energy storage, surplus renewable energy produced at home is wasted – "only to pay [Russian gas company] Gazprom to fill the gap," EASE said.

To truly value decarbonisation through energy storage, the industry association, calls for EU energy market rules to be changed in order to ensure that capacity auctions are not predominantly won by gas peaking power plants. ■

Vulcan has commenced discussions with local stakeholders to expand operations at its 100%-owned Insheim geothermal renewable energy plant to provide heating and energy security to local communities.



Emissions rebound as world economy relies on coal to power growth

Energy-related CO₂ emissions have risen to their highest-ever level, as the global economy rebounded strongly from the pandemic and relied heavily on coal to power that growth. Fuel-by-fuel analysis by the International Energy Agency (IEA) shows that global CO₂ emissions surged 6% in 2021 to 36.3 billion tonnes, more than offsetting the pandemic-induced decline.

Combined with methane emissions, and estimates of nitrous oxide and flaring related CO₂ emissions, the IEA analysis shows that energy-related emissions worldwide have risen to their highest level ever.

Though pandemic related lockdown had curbed emissions by 5.2%, the world economy rebounded strongly since then driven by unprecedented fiscal and monetary stimulus and a fast – although uneven – roll-out of vaccines. The recovery in energy demand in 2021 was compounded by adverse weather which led to more coal being burnt for power generation, despite strong renewables energy contribution.

Biggest-ever rise in electricity demand

The 6.9% rise in emissions from power and heat generation in 2021 was caused by the biggest ever year-on-year increase in global electricity demand. "Rising by close to 1 400

terawatt-hours (TWh), or 5.9%, the growth in electricity demand in 2021 was more than 15 times the size of the drop in demand in 2020," analysts pointed out.

Fossil fuel, notably thermal coal, were instrumental to power the economic rebound. Dispatch of coal-fired power plants met about half of the increase in global electricity demand in 2021, boosting the share of coal in the power mix to 36%. Coal power-related emissions consequently record 10.5 Gt, which is 800 Mt above their 2020 level.

"Without supply constraints and high prices that affected China and India during certain periods of the year, global coal use for electricity generation in 2021 would have been even higher," analysts commented.

Looking back, the world economy has not staged the "sustainable recovery" that IEA executive director Fatih Birol called for at the start of the pandemic in 2020. Some advanced economies have put in place decarbonisation measures, with some \$470

billion having been dedicated to sustainable measures within recovery packages through 2030.

More clean energy spending needed

"Looking at the crucial 2021-2023 period, measures to date could mobilise around \$400 billion a year in clean energy investment. However, this would still only represent 40% of spending needed in the IEA's Sustainable Recovery Plan, which is aligned with a pathway towards reaching net zero emissions by 2050 globally," analysts pointed out.

Calling for urgent action, the IEA says world leaders must now ensure that the global rebound in emissions in 2021 was a one-off – and that sustainable investments combined with the accelerated deployment of clean energy technologies will reduce CO₂ emissions in 2022. If not, the global of Net Zero by 2050 might get out of reach. ■



IGU

WGC2022

28th WORLD GAS CONFERENCE
DAEGU, KOREA 23-27 MAY

VISIT THE
ULTIMATE
GAS INDUSTRY
MARKETPLACE

23-27 MAY 2022
DAEGU, KOREA

FREE EXHIBITION WGC2022.ORG
REGISTRATION NOW OPEN

MAN commissions gas CHP in Frankfurt (Oder), replacing lignite unit

MAN Energy Solution has commissioned a new 51 MW combined heat and power (CHP) plant in Frankfurt (Oder). The town's municipal utility invested nearly €60 million in the new facility which replaces an older, lignite-burning plant and helps save 50,000 metric tons of CO₂ annually.

Powered by five 20V35/44G Otto gas engines, the CHP provide 51 MW of electrical energy as well as 50 MW of district heating. By installing an additional 20 MW hot-water boiler, MAN engineers increased the total thermal capacity of the plant to 70 MW.

Commissioning works were completed within the estimate schedule, despite challenges related to the pandemic, and the five engines have been test-run since mid-February.

Fuel efficiency tops 90%

The efficient gas-fuelled CHP replaces a soon-to-be-retired CHP plant, in operation since 1997. The incumbent plant was running on both lignite and natural gas, while the new CHP will run exclusively on natural gas.

"By introducing this new plant, we will save up to 50,000 metric tons of CO₂ annually," said Torsten Röglin, managing director of Stadtwerke Frankfurt (Oder). "In the old power plant, around 60,000 tons of brown coal dust were burned annually. In contrast, the new plant not only exclusively uses nat-



New municipal CHP in Frankfurt (Oder)

ural gas, which is more climate-friendly, but is also particularly fuel-efficient with an overall efficiency of more than 90%."

CHP paired with heat storage

The fast-ramp gas engines, capable of reaching full output in less than five minutes and coping with rapid load changes, optimise the flexibility of the entire CHP plant. In combination with a 10,000 cubic-meter heat-storage facility, also newly built, waste heat from the engines can be stored when heat demand is low while continuing to generate electricity. This enables Stadtwerke Frankfurt (Oder) to react quickly and flexibly to price fluctuations in the electricity market. ■

GE to deliver gas turbines for 670 MW power plant in Panama

GE has secured an order to deliver gas turbines and related generating equipment for the 670 MW Generadora Gatún power plant in Panama. Built on behalf of a consortium which includes InterEnergy Group and AES Panama, the flexible gas plant will help support Panama's goal to generate 70% of its energy from renewables by 2050.

Today, Panama relies heavily on hydro power but frequent draughts made the government incentivise the build-out of wind and solar power units. However, these inherently intermittent energy sources need to be backed up by dispatchable units, like flexible gas turbine-driven power plants, to improve the reliability of Panama's power grid.

Generadora Gatún will be fuelled by regasified LNG, delivered via AES' LNG import and storage facility built in 2018. The terminal was the first to provide LNG to Panama and neighbouring countries in Central America in support of the local power, industrial and transportation sector. ■



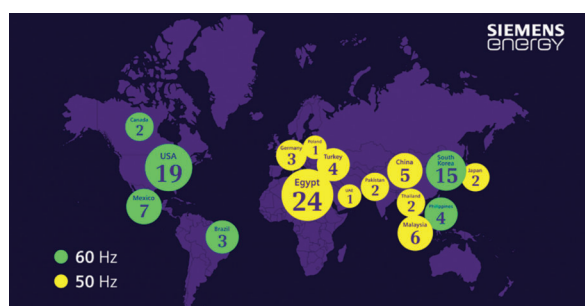
Ground breaking for Generadora Gatún

Siemens Energy delivers four H-class power plants in Greater Bay Area

Four H-class turbine driven power plants will be delivered by Siemens Energy in the Guangdong-Hong Kong-Macao Greater Bay Area (GBA) in southern China. Guangdong Energy ordered a 675 MW combined-cycle plant to be built in Guangzhou, while Shenzhen Energy wants to add three CCGTs at the Dongbu and Mawan plants, all due operational between mid-2023 and mid-2024.

Home to over 70 million people, the Guangdong-Hong Kong-Macao Greater Bay Area (GBA) is among the most dynamic regions in China and has a rapidly rising energy de-

mand. The regional government aims for a sustainable development hence Siemens Energy and Shenzhen Energy in December 2019 partnered on R&D and smart and green energy.



Overview of 100 H-class gas turbines installed

Under the latest agreement with Guangdong Energy, Siemens engineer will transform the utility's existing coal-fired power plant into a higher-efficiency gas-fired plant which will cut emissions by over 60%. Scope supply includes a SGT5-8000H gas turbine, a steam turbine, two generators and related auxiliary equipment. The combined-cycle

plant will generate 2.3 billion kilowatt-hours of power annually and is expected to go into commercial operation in mid-2023.

For Shenzhen Energy, three H-class combined cycle power units will be added for Dongbu Phase II and one further unit to upgrade the Mawan power plant. Scope of supply includes three SGT5-8000H gas turbines, three SST-5000 steam turbines, three SGen5-3000W generators, and auxiliary systems. Both situated in Shenzhen, the two projects are due operational by the end of 2023 and in mid-2024 respectively and generate over six billion kilowatt-hours combined.

The two projects include Siemens' 100th H-class turbine sold worldwide. ■



Gastech

Gastech Hydrogen

EXHIBITION & CONFERENCE
FIERA MILANO, ITALY 5-8 SEPTEMBER 2022

Under the patronage of

Ministry of Ecological
Transition

Ministry of Foreign
Affairs



Look towards a brighter energy future at Gastech Milan 2022

Be a part of the conversation to enable a low-carbon and affordable energy future for all at Gastech's 50th anniversary. Showcase your technologies to the world and exhibit at the leading natural gas, LNG, hydrogen and low-carbon solutions event, Gastech Milan, 2022.

40,000+
Attendees

1,000+
Exhibitors

600+
Speakers

4,000+
Delegates

24
International
country pavilions

Book your stand today by visiting
gastechevent.com/exhibit,
call +44 (0) 20 4551 1602 or
email sales@gastechevent.com

[in](#) [@](#) [f](#) [t](#) @gastechevent #Gastech

Host Region



Host City



Host Venue



Organised By

