



India's new-build power gen capacity tops 15 GW as economy recovers

The stark gap between government pledges to reduce emission and the lack of far-reaching actions heralds a growing regulatory risk. According to Fitch Ratings, energy-intensive industries, thermal power producers and the transport sector can be hit by a sudden rise in more stringent climate rules.

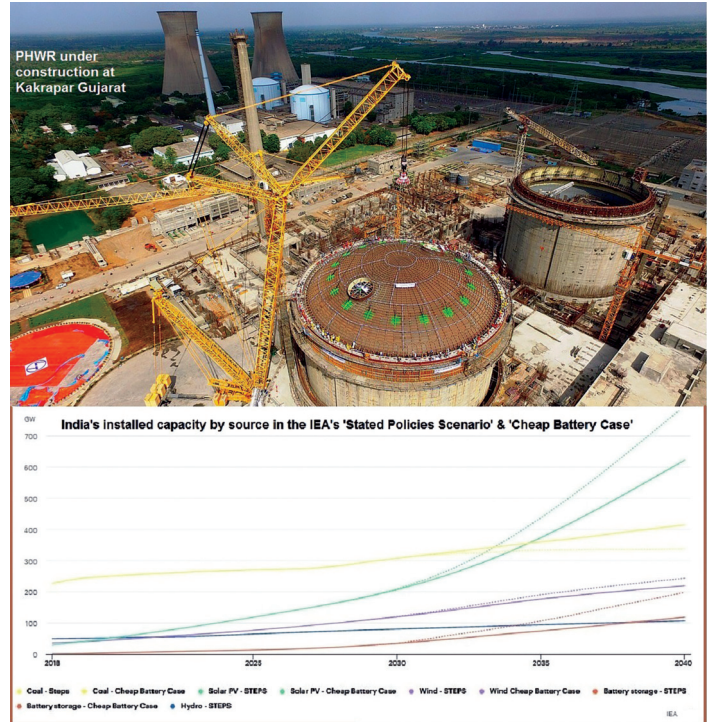
Most countries around the globe currently lag substantially behind their existing Nationally Determined Contribution (NDC) pledges, let alone the emissions trajectories required to limit warming to 1.5 Celsius. Hence, analysts anticipate that the timings (2020 and 2023) of the stock-take of NDC performance and 'ratchet' mechanisms of the Paris Agreement "could trigger a change in policy direction."

"Governments have been helping to mitigate direct and indirect costs of carbon, but older and inefficient plants will increasingly struggle to obtain support. In the meantime pressure for carbon reduction is likely to erode financial support," Fitch Rating said.

Fall in free carbon allowances

"Canada, Japan, South Korea, Mexico, South Africa and the EU are expected to see a significant fall in free carbon allowances by 2023," Fitch Rating forecasts. Ultimately, the effects on companies' bottom

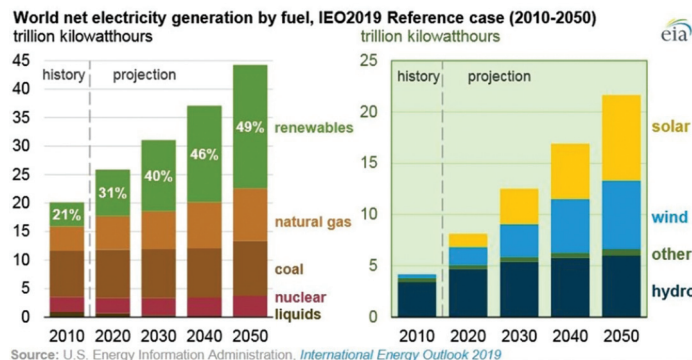
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Coal to generate less than a quarter of world's electricity by 2050

Dirty king coal is seen to shed 13 percent market share, accounting for just 22 percent of the global power mix in 2050 amid a massive build-out of renewables and some gas-fired backup power units. According to U.S. government analysis, wind and solar will rise 20 percent by mid-century and provide nearly half of the world's electricity needs.

On the supply side, the U.S. Energy Information Administration's (EIA) projects that worldwide electricity generation will grow by 1.8% per year to reach nearly 45 trillion kilowatthours (kWh) by 2050, almost 20 trillion kWh more than the 2018 level. Growth in electricity demand in non-OECD regions far is seen outpace those in OECD regions.



Renewables competitive with fossil generation

New-build wind and solar PV installations are becoming economically competitive with fossil

technologies worldwide, EIA analysts pointed out. "But without policy incentives, growth in generation from renewable sources is limited in regions with slow demand growth," they warned.

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line will ultimately depend not just on carbon pricing. It will rather hinge on net allowances – which will be influenced by plant-level factors and some of the company-level characteristics outlined above.

Looking ahead to 2030 and beyond, analysts say the impetus to turn pledges into action is far from uniform across the world. To date, the effectiveness of carbon pricing schemes in reducing emissions is limited by low coverage and prices. But given that carbon pricing is a technology-agnostic policy

measure, “prices, coverage and exemptions may tighten in the near future to align with NDCs.”

Difficulty to ‘clean-up’ some technologies

Steel, cement, ammonia fertilizers, and ethylene manufacturers will be hit hard any tightening of emission credits because of technical difficulties to decarbonize these technologies, and the lack of substitutes. Hereby, regional differences in industrial and

manufacturing processes will affect compliance costs.

“Impacts of carbon pricing will not be felt uniformly – not even within affected regions – given that it will be determined by a range company- and technology-specific characteristics like asset lifespan, availability of substitutes and mitigation possibilities,” analyst said, concluding “the competitive position [of individual companies] are key determinants of exposure to climate policy risk.” ■

Spain agrees coal exits amid falling gas prices, higher carbon costs

Spain’s new government has revised the 2021-2030 Energy Plan, speeding up the country’s coal exit and stepping up solar PV targets. Coal-fired power units will “cease to be competitive by 2030,” the plan reads, given that CO2 prices in Europe are likely to rise to €35 per ton and considering the relative price of gas.

Tougher emission rules under the EU Large Plant Combustion Directive will further deter utilities from burning coal. Nine out of the existing 15 coal-fired power units in Spain could “possibly not be in operation” by 2021, if utilities decided to avoid the investment required to comply with tougher EU rules, the government reckons.

Gas-fired generation is also seen to fall slightly in Spain’s revised 2021-2030 energy plan, down from 27.2 GW currently to levels around 26.6 GW in 2030. In contrast, combined heat and power (CHP) capacity could rise 0.7 GW over the same period to reach 3.7 GW.

Massive renewable build-out

Across most of the Iberian Peninsula, the Spanish government envisages a massive build-out of wind and especially solar capacity, having raised its solar capacity target by 2.3 GW to 39.2 GW. By the end of



the decade, Spain’s combined wind and solar capacity is meant reach 96.8 GW, making up nearly two thirds of the country’s installed capacity of 160.8 MW.

The revised energy plan is “very final,” the Spanish energy ministry noted, although it still needs approval by the European Commission. ■

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Europe’s electricity demand is projected to grow at about 1 percent per year through 2050; however, a regional CO2-cap will lead to lower fossil-fired generation and rising renewables generation to meet demand.

By 2050, the share of wind and solar generation in Europe is seen increase from 20 percent to almost 50 percent. Fossil-fired plants will fall from 37 percent to just 18 percent, with coal power units likely to account for only 5 percent.

Green energy takes hold in India

India has the most rapid electricity demand growth, around 4.6% per year, in the

IEO2019 Reference case. Although India has developed target levels for solar and wind capacity, it does not have an aggressive emissions reduction policy in place, so EIA projects coal-fired generation growth in addition to growth in solar and wind generation.

Solar, wind, and coal combined will account for 90% of India’s power gen mix in 2050. The contribution of wind and solar is seen rising from less than 10% in 2018, to more than 50% in 2050. In contrast, the share of coal power in India’s electricity output falls from about 75% to less than 40% over the same period. ■

India struggles to lower 'per unit costs' of natural gas

Importers of LNG to India strive to lower the per-unit-costs of natural gas to unlock the huge demand potential from fuel switching in the power sector. In eastern India, however, a severe lack of pipeline capacity hampers the distribution of re-gasified LNG, though works on the 2,655km Pradhan Mantri Urja Ganga (PMUG) pipeline are due completed by year-end.

Construction on the PMUG pipeline began in May 2019, and has been dragging on ever since. In addition, smaller gas pipeline projects such as the Cochin-Man-galuru-Bengaluru connector have suffered from severe delay due to extreme weather and engineering problems, which suggests the much larger PMUG project will not be completed on time.

India's annual gas demand has been growing by an average of about 4 percent since 2015, driven by particularly strong growth in the power sector and by demand for feedstock by heavy and petrochemical industries. However, gas supply is much easier to come by on India's west coast, notably four of the five Indian LNG terminals – Dahej, Hazira, Dabhol and Cochin. Meanwhile, the capacity of the fifth – Ennore LNG in Tamil Nadu state – is being underutilized.

Launch of new e-RLNG scheme

Eager to promote clean energies, the Indian government is about to give way to utilities' demands and allow power plants running on RLNG to sell electricity into the higher-priced spot market, without having to adhere to their power purchase agreements.

The proposal, launched by Indian power producers, calls for a gas auction mechanism that will pool any domestically produced natural gas with imported LNG and then offer the fuel at a subsidized tariff. An-



alysts say the proposed e-RLNG scheme will require fewer subsidies than in past years due to the fall in global oil prices.

The aim is to revive some 25,000 MW, or 25 GW, of stranded gas-fired power generation capacity across the country, and help alleviate a looming energy crisis as the summer season approaches. Much of the 25 GW stranded capacity is lying idle given that total gas supply is hardly reaches 40 million standard cubic feet per day – a far cry from the plant's combined gas requirements of 117 mmscm/d.

The new e-RLNG scheme has been proposed to initially run for 2 years, based on financial support from the India's Power System Development Fund. The RLNG price is currently prices around \$8/MMBtu, and in previous e-RLNG bidding rounds the government subsidized the electricity tariff at Rs 5.50 per unit. Observers expect, however, the government will this year keep the subsidies lower at Rs 4.24 per unit.

In contrast to the government's pledge to gas generation and green energy, Adani Power and NTPC, two of India's largest power producers, have pleaded to extend

the deadlines of retrofitting coal power stations by two to three years. High costs for retrofits and India's continued reliance on cheap thermal coal now needs to be weighed up against rampant air pollution.

Utilities seek to stick to coal power

Privately-held Adani Power, for once, calls for an extension of stricter emission limits at two of its large-scale power stations until March 2023. The two units were purchased from the GMR Group last year, and the Adani claims there would still be ownership issues to be resolved before looking into a plant retrofit. State-owned NTPC, India's largest utility, has sought to push back the deadline by up to two years at its Bon-gaigaon eastern Indian plant.

Coal is by far India's dominant energy source, and the power sector accounts for two-thirds of India's coal consumption. Now policy makers and regulators in the second largest economy in the Asia-Pacific region needs to decide on whether they want to stick to their green energy targets, or keep watering them down. ■

India can ill afford switching to 'gas-based economy'

Transforming India to a "gas-based economy" has been President Narendra Modi's vision for years but the country can ill afford subsidizing LNG imports to reduce fuel costs for power plants. Banks in-

vested some Rs50,000 crores (\$7.18bn) in these projects – many unable to repay their debt, leaving Indian public money at risk.

State-owned banks, forced to write-off

loans to operators of stranded gas power plants, are weighing heavy on the Indian public purse. A parliamentary panel urged the Government to take action, saying that "since this stranded gas-based capacity involves a significant amount of public money, it cannot be

allowed to become junk."

"Since these gas-based power plants were set up on the basis of the government's assurance regarding supply of gas, it becomes incumbent upon the government to help them come out of stress," it stressed, urging the Government to priorities gas supplies to power plants.

Dwindling domestic gas supply from the Krishna Godavari Dhirubhai 6 (KG D6) block and comparatively high prices for LNG imports have led to affordability issues. Cheaper fuel prices for other power sources—coal, solar, wind, and hydro—mean that the gas-fired plants can't pass on these costs without losing their competitiveness. ■



Night view of a thermal power plant in India

Liquid ammonia 'more attractive' than hydrogen

Power-to-X through electrolysis can swiftly utilize large overcapacities of wind and solar power, helping to balance the grid. Producing ammonia – a hydrogen liquid – is more attractive than hydrogen gas, the World Energy Council (WEC) says, given its energy density is higher by a factor 300.

Liquid ammonia is easy to transport and a substantial supply chain already exists. "We cannot manage the energy transition with electrification alone. Molecules will play a huge part (...) and we can produce those molecules in an increasingly green way."

Storing surplus renewable energy as hydrogen or ammonia is more lucrative than curtailing the capacity of offshore wind and solar at times of peak production. Green hydrogen is deemed to become the "backbone of future, largely decarbonized power generation," a Siemens white paper finds. This is because chemically stored electrical en-

ergy is, to date, "the only way to overcome renewable sources or times where there is little or no wind or sunshine."

Switching from coal to NH3

Japan already retrofits existing coal plants to run with ammonia, a hydrogen liquid, NH3. "You can use carbon capture and storage to produce ammonia, or even use renewable sources to create hydrogen and ammonia," explained says WEC Secretary General, Christoph Frei.

"It's important that we go for solutions that are the easiest to implement," he stressed. Hence, it's vital to couple the re-

newable energy sector with the gas infrastructure through Power-to-X.

Half of the world's capital is invested in energy and related infrastructure. "So rather than kill the molecules, we better see them become green as well," Mr. Frei said, pointing at electrolysis as a process to generate green hydrogen from excess wind and solar power.

Counting capacity factors and costs

Production costs for renewable energy have fallen drastically as technology advances.

Levelized costs of electricity (LCOE) for on-shore wind power will soon fall below \$20/MWh in the U.S. and Mexico, and similar low prices can be achieved for solar power in northern Australia and the Saharan Africa and Saudi Arabia.

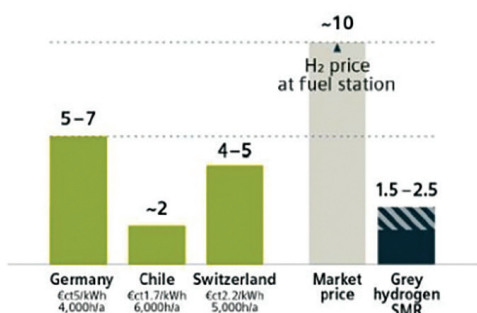
With cheap renewable energy and up to 6,000 full-load hours of wind or solar PV installations for some locations, green hydrogen generated from electrolysis can already compete with grey hydrogen from steam methane reforming (see graph).

Considering today's prices for hydrogen at fuelling stations, e.g. in Switzerland, green hydrogen would make a positive business case, a Siemens white paper finds.

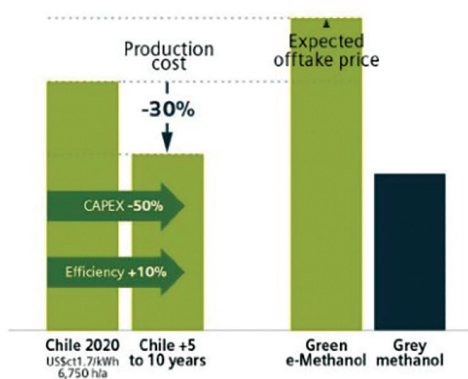
Power-to-X will become a real business case

From low-cost renewable power to cost-effective e-Fuels – Power-to-X is economically viable if its environmental benefit counts.

Green hydrogen's positive business case: hydrogen production cost depending on power supply and electrolyzer CAPEX



e-Methanol becoming competitive to bioethanol levelized costs of e-Methanol from electrolysis (US\$/t)



Source: Siemens

Finnish researchers test TW-scale gas power storage

Modelling from the Technical Research Centre of Finland (VTT) suggests large scale power storage utilising gas may soon be a reality. "First prototypes will be available in 12 months from now with industrial implementation in 24 to 26 months," *Gas to Power Journal* was told.

Researchers at VTT focus on energy storage as a means to overcome bottlenecks in renewable power systems.

Research by the team at VTT has studied gas power storage at three distinct scales - KW, MW and Terrawatt (TW). The first stage covers smaller household devices and storage units at this scale are already commercially available. The MW scale projects are

expected to start appearing within the next year paving the way to TW storage systems designed to meet the needs of national utilities.

"We aim at showing how storage technologies can balance the electricity grid, and how they mobilise the transport sector. We have a concept ready for the Terrawatt-scale unit," said Pasi Vainikka, principal scientists at VTT. "In modelling we would have a platform that can be used in

designing an energy system with mobility and electricity grids merged and with large storage infrastructure in place."

Looking further into the future the team are modelling systems that are entirely renewable, where gas used to store energy is created artificially from excess solar power. This would greatly reduce the environmental impact of gas power generation as there are no extraction or transportation costs.

Oil and gas prices fall as fears of coronavirus' economic impact escalate

Oil and related natural gas prices are falling, weighed down by fears over the economic impact of the fast-spreading coronavirus in China – one of the world's largest oil consumers. Brent crude prices have shed \$6 a barrel since 20 January, with front-month March20 last seen trading at \$58.96 per barrel.

U.S. West Texas Intermediate crude futures, meanwhile, plunged 3.8 percent to a three-and-a-half-month low of \$52.15 per barrel.

"Investors react quickly to any sign of negativity and this is no exception as China announces that the issue has become an emergency. This could keep oil prices fragile until the coronavirus shows signs of slowing down," said Mihir Kapadia, CEO at Sun Global Investments.

The deadly disease caused by the coronavirus so far killed 81 people in China with almost 3,000 confirmed ill, while at least 44 cases have been reported abroad in countries as far as Singapore, France and the U.S.

The Economist Intelligence Unit said the longer-term impact of the coronavirus will depend on how quickly it is contained and the confidence of the public in the authorities' ability to take effective measures. "The experience of previous disease outbreaks, including SARS in 2002-03, suggests that



consumer spending could be negatively affected in the next two-three months, but that this is likely to be compensated for later in the year," commented EIU global economist, Cailin Birch. In the wake of the SARS outbreak, the Chinese economy slowed from 11 percent to 9 percent and

recovered slowly.

Shares at London's FTSE 100 share index on Monday shed more than 2 percent, with luxury clothes maker Burberry losing 5.5 percent in share value. Other loss-making shares were British Airways owner IAG and HSBC Holding.

U.S. net gas exports forecast to almost double by 2021

Growth in exports of U.S. gas production will nearly double by 2021 as new liquefaction facilities are placed in service and new gas interconnectors to Mexico begin operations. Exports are forecast to exceed imports by an average 7.3 billion cubic feet per day (Bcf/d) in 2020, and 8.9 Bcf/d in 2021.

Growth in gas demand for export started to exceed growth in gas-burn for power generation in 2019, as the U.S. shale gas revolution continues to unfold. Deliveries of shale gas production via national U.S.

pipelines to liquefaction and export facilities accounted for 12 percent of gas production.

Imports from Canada, meanwhile, declined over the past four years as domestic U.S. gas supplies from Appalachia into the Midwestern states have displaced some

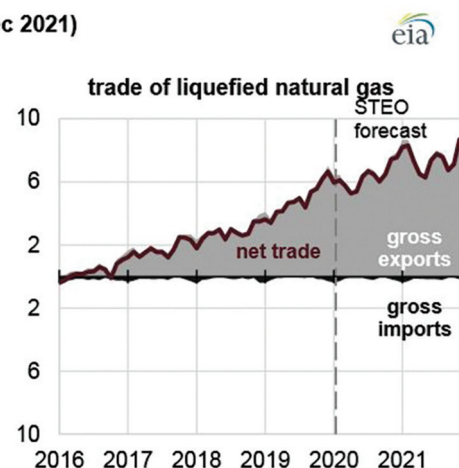
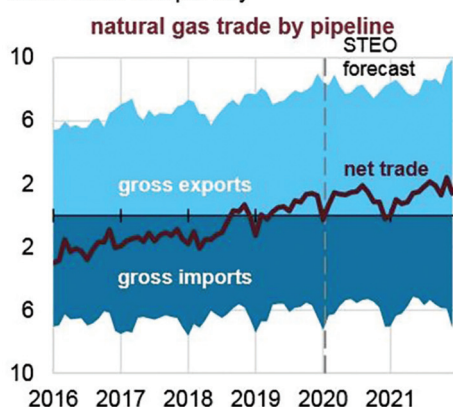
Canadian gas pipeline imports.

Exports of U.S. pipeline gas to Mexico, averaged 5.1 Bcf/d from January through October 2019 and increased due to the newly commissioned Sur de Texas-Tuxpan pipeline.

U.S. LNG exports averaged 5 Bcf/d over the past year, 2 Bcf/d more than previously, due to several new facilities that placed their first trains in service. In 2020, several new LNG trains are due to come onstream: Cameron LNG Trains 2 and 3 and Freeport LNG Train 3.

In 2021, the third train at the Corpus Christi facility in Texas is scheduled to come online, bringing the total U.S. liquefaction capacity to 10.2 Bcf/d at baseload, and 10.8 Bcf/d at peak capacity. Analyst at the EIA expects LNG exports to continue to grow and average 6.5 Bcf/d in 2020 and 7.7 Bcf/d in 2021, as facilities gradually ramp up to full production.

Monthly U.S. natural gas trade (Jan 2016-Dec 2021)
billion cubic feet per day



Source: U.S. Energy Information Administration, *Natural Gas Monthly* and *Short-Term Energy Outlook*

Gas turbine sales in upstream sector to top \$1.2 billion by 2024

Rising upstream spending, notably in unconventional oil and gas resources, will drive the related gas turbine market to an estimated \$1.2 billion, growing at 3.5 percent annually through 2024. Major suppliers in this sector are GE, Siemens, Mitsubishi Heavy Industries, Solar Turbines, and Kawasaki Heavy Industries.

Gas turbines, used of oil and gas upstream, are in high demand as the power needs in the offshore platforms and for remote exploration. Gas turbines used for mechanical drive is will witness highest growth during, according to reportlinker.

By turbine size, the '1-20 MW' turbine will likely remain the largest segment due to its wider application area but the turbine size '20 MW and above' will see the highest growth. High efficiency as compared to smaller turbines is driving growth of this segment, analysts noted.

High growth, high spend in Permian and Bakken Shale

North America is likely to witness the highest growth through 2024 due to growing investment in unconventional oil and gas facilities. The U.S. Energy Information Administration (EIA) forecasts that U.S. crude oil production will average 13.3 million barrels per day (b/d) in 2020, a 9% increase from 2019 production levels, and 13.7 mil-

lion b/d in 2021, a 3% increase from 2020.

The Permian region, spanning across western Texas and eastern New Mexico, remains the most prolific crude oil production growth region in the United States. Favorable geology combined with technological improvements have, according to EIA analysts, contributed to the Permian region's high returns on investment and years of remaining oil production growth potential.

Permian crude oil production is seen average 5.2 million b/d in 2020, an increase of 0.8 million b/d from 2019 production levels. For 2021, the Permian region will produce an average of 5.6 million b/d. The Bakken region in North Dakota, meanwhile, is singled out as second-largest growth area in 2020 and 2021, growing by about 0.1 million b/d in each year.

Analyst's U.S. crude oil production forecast is based on the West Texas Intermediate (WTI) price forecast in the January 2020 STEO, which rises from an average of \$57 per barrel (b) in 2019 to an average of \$59/b in 2020 and \$62/b in 2021. ■

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North America is likely to witness the highest growth through 2024 due to growing investment in unconventional oil and gas facilities

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GE gets \$1.3m grant to speed up timeline of 3D-printed components

General Electric, together with Oak Ridge National Laboratory and Xerox-held PARC, has been awarded a \$1.3 million project to reduce the timeline for designing and validating 3D-printed components by as much as 65 percent. The technique is vital to swiftly design complex gas turbine parts.

When designing a new 3D component, researchers normally consider how well its material composition responds to heat and stresses, or how its design impacts air-flow, or aerodynamic performance. Validating of a complex part can take between 2 and 5 years.

Striving to speed up things, researchers from ORNL and GE believe they can cut in half the timeline to create, test and validate new 3D part designs. "Using multi-physics enabled tools and AI, we think we can beat the timeline for some traditional manufacturing processes by automating the entire process, said Brent Brunell, leader of GE Research's Additive efforts.

Surrogate models

Optimization of structural characteristics has already been automated but has not ex-

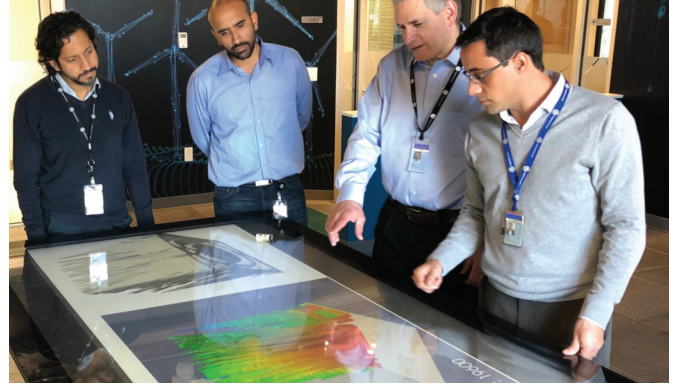
tended to a part's thermal and fluid properties. On this project, researchers from GE and PARC will use AI to automatically generate surrogate models from additive producibility data and seamlessly integrate it with multi-physics design optimization techniques.

The Summit supercomputer at ORNL will create these AI-based surrogates to analyze additively manufactured components and generate data necessary for training and evaluating the new models. Built using machine learning, surrogate models can guide the optimization models in feasible regions of very high dimensional design spaces.

"This is the type of project that leverages the unique capabilities at ORNL – experimen-

tal and computational facilities – as well as expertise in computational science and additive manufacturing," said John Turner, Computational Engineering Program Director at ORNL.

The program will culminate in the demonstration of a defect-free, high-performance additively manufactured multi-functional design capable of withstanding high temperatures and stresses with improved performance vs. conventional casting. ■



3D-printing revolutionizes making of turbine blades

Additive manufacturing, also known as 3D-printing, is making inroads in the energy sector. According to Global Data, power utilities and equipment manufacturers are "witnessing a huge opportunity in 3D printing to make their operations more efficient." Early adopters of this technology are GE, Siemens, Rosatom and Westinghouse.

Lower manufacturing costs and shorter timeframes are the key advantages of this technology. Delicately made by adding layer by layer through laser melting and additive manufacturing, these precisely-made components are a 'perfect fit' and can significantly enhance the efficiency of turbines components. The technology also allows the industry to quickly manufacture and test prototypes.

Siemens in 2018 achieved a milestone by producing the first 3D-printed metal replacement parts for an industrial gas turbine, whereby the lead time for manufacturing these parts was reduced by 40%. Two years prior, the German manufacturer bought and integrated the 3D printing specialist Materials Solution and invested nearly €30 million in a new 4,700 square-meter factory in Worchester, UK, where experimental laboratory processes in Selective Laser Melting (SLM), are turned into industrial production practices.

Global Data analysts pointed out that Siemens also uses AM technology for its HL-

class gas turbines, notably the SGT5-9000HL. The first 50Hz turbine of this HL-class series will be deployed at SSE's Keadby-2 combined-cycle power station in the UK. In Germany, Siemens cooperated with E.ON to install a 3D-printed burner for an SGT-700 industrial gas turbine operating at E.ON's combined cycle power plant in Philippsthal, in the German state of Hesse.

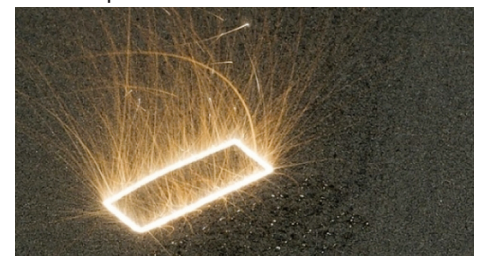
Over in the United States, GE has already shipped 9000 gas turbine components that had been manufactured through 3D-printing. The U.S. manufacturer strikes to tap the full potential of 3D printing to make test prototypes of turbine components in a short time for testing, and eventual use for mass-production.

Scandinavian firms play catch-up

In Finland, Wärtsilä is advancing plans to create Research Centre for 3D metal printing in Vaasa. Researchers from ABB, Wärtsilä and two universities will collaborate, with construction for the R&D centre planned to start in 2020. The project already

has some very powerful backup from Sweden, thanks to the innovation hub AMEXCI which is bringing together some of best expertise from top Nordic companies. Founded in December 2017, AMEXCI features participation from Wärtsilä, ABB, Electrolux, Husqvarna Group, FAM, Höganäs, Saab, Scania, SKF, Stora Enso and Atlas Copco.

However, there will be some catch-up to do for 3D metal printing in Scandinavia, AMEXCI's chief executive Edvin Resebo cautioned. "The main drivers behind the development within what can be considered 'the Additive Manufacturing Business' are not in the Nordic Region," he said, "so it is important that we work together to stand strong in a competitive environment." ■



Beijing Gas builds LNG import terminal to reinforce 'Blue Skies' policy

The Chinese government has approved Beijing Gas' plans to build a 5 mtpa LNG import terminal near Tianjin City by 2022 to help boost regional gas imports. The economically thriving Beijing-Tianjin-Hebei region, home to some 113 million people, is at the heart of China's 'Blue Skies' policy aimed at accelerating a coal-to-gas switch in the power sector to improve air quality.

Beijing Gas new LNG import project in the Nangang district of Tianjin is backed by a \$500 million loan from the Asian Infrastructure Investment Bank (AIIB). Going forward, Beijing Gas plans to gradually expand the Tianjin LNG terminal which will add to Sinopec's existing Tianjin North import terminal and CNOOC's floating storage and regas unit (FSRU).

Watering down Coal-to-Gas policy

Greater availability of attractively-priced natural gas, both LNG and pipeline gas, is vital to encourage power producers to turn away from burning thermal coal. The 'Blue Skies' policy, imposed in 2018, expands pollution controls to 82 cities across northern and eastern China. The regions that fall under the government's "Blue Sky" plan are now home to 37% of population contributing to 41% of China's GDP.

However, Beijing policy makers in winter 2019/20 slowed their green energy push due to a weakening economy and competition from cheaper coal. Still, gas demand is forecast to rise nearly 8 percent, reaching 145 billion to 150 billion cubic meters (bcm), according to Sinopec.

"Based on what is practical, we should use electricity where electricity is available, gas where gas is sufficient, and coal where coal supply is ample," Premier Li Keqiang recently commented on energy security this winter.

LNG can help reduce reliance on coal. But coal is still king in China's energy mix as the dominance of this highly emissions-intensive fuel has increased in China in 2019, reaching 48.1 percent of global coal consumption. The People's Republic remains the world's largest coal producer, consumer and importer. ■



Render of Tianjin LNG import terminal

Mubadala buys and expands Uzbek mega plant

Abu Dhabi-based Mubadala Investment Company has signed an agreement with JSC Thermal Power Plants and the Uzbek government to acquire, finance, develop and operate the 1.7 GW Talimarjan Power Complex. The privatized combined-cycle gas turbine (CCGT) plant will be expanded and run under an Independent Power Producer (IPP) model.

Uzbekistan, which borders large oil and gas producers Kazakhstan and Turkmenistan, has substantial hydrocarbon reserves but is not a massive developer yet. Future upstream developments could help source domestic natural gas for power generation, which would lower electricity costs and help facility growth of energy-intensive industries.

The Talimarjan Power Complex, situated some 440km southwest of Tashkent, was built at a cost of \$819 million and commissioned in 2004 as an 800 MW gas-fired unit. In 2018, the combined-cycle plant was expanded by two additional 450 MW gas turbines which pushed total capacity to 1,700 MW. ■

Turkish IPP seeks to mothball uncompetitive power unit

Aksa Energji, a Turkish Independent Power Producer (IPP), has asked regulators to temporarily close a gas-fired power plant (147 MW) in the southeast province of Şanlıurfa. "It has become less possible to produce electricity at a competitive price," Aksa said in a filing to the Istanbul Stock Exchange.

Profit margins are squeezed amid rising fuel costs, but also because Turkish authorities limited electricity price rises in a bid to rein in inflation. Several large utilities were consequently forced to restructure foreign currency loans, agreed earlier to build power plants or retrofit and expand operations.

The Şanlıurfa unit had been running at merely 15 percent of its capacity in the first nine months of last year, Aksa Energji noted. This means it contributed just 2 percent of Turkey's total power output from January to September, and just 0.5 percent in the third quarter.

Built in 2011, the Şanlıurfa CCGT initially

had an installed capacity of 120 MW. A retrofit later expanded overall capacity to 147 MW. The site also includes 12 Wärtsilä 20V34SG gas engines for back-up power supply.

Several power producers across Turkey consequently consider mothballing or closing down some of their gas-fired power units, as competition with cheaper thermal coal units intensifies. Enka recently halted operation of two gas-fired power station, including the large Gebze plant in western Turkey, after power purchase agreement with state-run EÜAS ended. Aksa in November 2018 closed down 115 MW plant in Manisa in western Turkey, citing pricing problems. ■



Şanlıurfa power plant

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