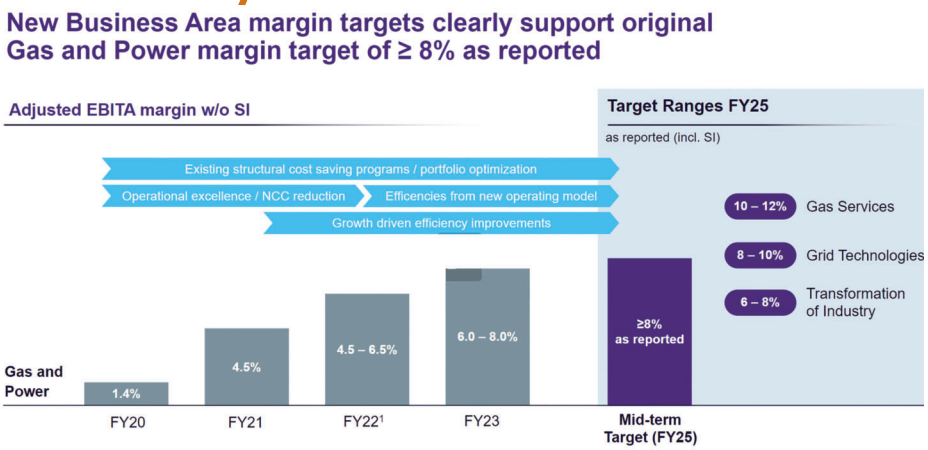
Gas to Power Journal
Peakload Power and Energy Storage

Weekly News 27 May 2022

Siemens Energy gets 'broader and flatter' by cutting management layers

Siemens Energy wants to slash 30% of its management positions and reduce hierarchy layers from eleven to six as the structure will get "broader and flatter," CEO Christian Bruch announced Wednesday at the company's Capital Markets Day. The full takeover of Siemens Gamesa is hoped to close in the second quarter, while the new Gas Services units is meant to achieve an 10-12% EBITA margin.



1 With the Q2 earnings release (May 11, 2022), Siemens Energy maintained the guidance range for the GP segment in fiscal year 2022. However in light or prevailing challenges Siemens Energy expects results in GP towards the low end of the range.

Cutting headcount and hierarchy layers will "make the company a lot simpler," Bruch said, adding there will be a harmonized regional footprint – not least through the integration of Siemens Gamesa's lossmaking wind power business. "Wind is a key pillar, however, the business needs stabilising. It's about speed and ease of the transformation in a market which is difficult in terms of supply chain. We believe we are truly better and stronger together," he told analysts at Siemens Energy's Capital Markets Day.

Siemens Energy expects the full takeover of Siemens Energy Renewable Gamesa (SGRE) to close in the second quarter of 2022, possibly as early as October. "If the offer is accepted then the transaction is valued at €4 billion at an offer price of €18.05 and Siemens Energy intends to finance up to €2.5 billion with equity, the remainder through debt as well as cash-on-hand," explained CFO Maria Ferraro.

Ambitious revenue targets

Announcing a revamp, CEO Bruch will split the company's gas and power segment into three business areas: Gas Services, Grid Technologies and Transformation of Industry – effective from the start

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Slots at Grain LNG in high demand to mitigate freeze on Russian gas

Grain LNG, Europe's largest LNG import terminal in Kent, UK, has achieved a record 67% utilisation rate in April and more cargoes are set to arrive as British LNG regas terminals help mitigate the impact of a freeze on Russian gas felt across Europe. All regas slots at Grain LNG are currently fully contracted and capacity will not become available before the end of 2028.

"Grain LNG intends to launch an Open Season to market this capacity in the near future," announced Importation Terminal Manager Simon Culkin.

Though UK gas demand is "about average for this time of year," he noted increased LNG deliveries were headed to Grain LNG and other terminals in northwest Europe as importers are rushing to source non-Russian gas supply.

Simultaneous unloads

Expansion works are underway at Grain LNG based on a contract signed with Qatar Terminal in 2020. The site storage will increase to 1.2 million cbm

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of Siemens Energy's new fiscal year in October.

Gas and Power Services generated about 30% of Siemens Energy's revenue and Bruch said the aim is to stabilise this business into a double-digit segment in the mid-term with an 10-12% EBITA margin. Grid technology, meanwhile, makes up roughly 20% of the company's revenue and is meant to achieve an 8-10% EBITA margin.

Transformation of Industry, meanwhile, combines the company's hydrogen business, industrial steam and compression which is meant to achieve a 6-8% EBITA margin. "The business we invest in is green hydrogen and derivative fuels, while compression is rather a turn-around case," Bruch noted.

Manufacturing margins in focus

In terms of turn-around, the compression business has made substantial progress from 2020 to today but is not at the finish line yet. At the same time, manufacturing margins and market share are targeted to rise: "We were below 20% market share for large gas turbines. Now we are back with a nice market share for gas turbines, not least because manufacturing was shifted to lower-cost countries," Bruch noted.

But CFO Ferraro underlined: "It's not just about cost increases, its also about ensuring stable supply of components.

Gas Power contributed positively, with a free cash flow before tax tax at 0.9 million for the first half of 2022, streamlining aero-derivative gas turbine business.

Looking ahead, the CEO wants Siemens Energy to focus on solutions to get to Net Zero while giving its people the opportunity to qualify for things to come. "Even though we are into technology, at the end of the day we are a peoples' business. "We want to become the most valued energy technology company [before GE] and be believe sustainability will help drive growth. ■

Nearly 20% of US power gen capacity can switch fuel to save costs

Fuel switching helps US power producers stabilise supply and save costs, with nearly 200 GW or 18% of the country's 1,116 GW of utility-scale generators capable to do so. The most common mode of fuel switching is from natural gas to petroleum liquids, at almost 132 GW capacity, followed by coal to gas switching, at around 21 GW.

About two-thirds, or 745 GW of all utility-scale generating capacity is based on combustion turbines and steam turbines that can potentially run on multiple fuel sources, though this may require a retrofit.

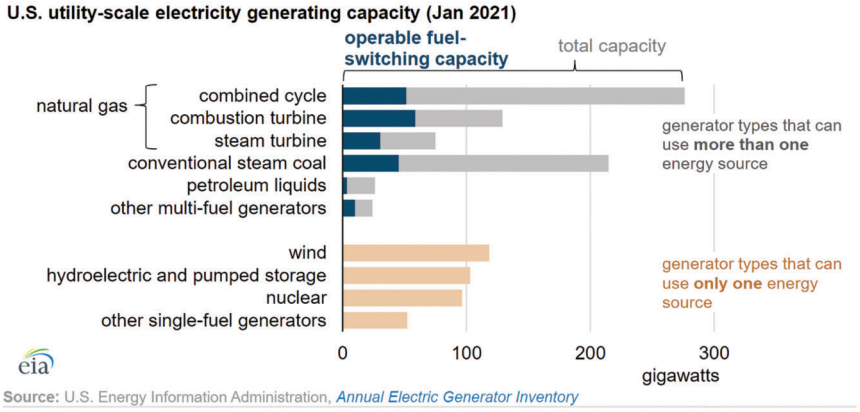
In contrast, around 371 GW capacity single-source technologies such as wind turbines, hydroelectric dams, and nuclear reactors, figures by the US Energy Information Administration (EIA) show.

Combined-cycle gas turbine (CCGT) power plants covered 34% of America's electricity needs in 2021, accounting for the largest share of installed generating capacity. Nationally, 19% of CCGTs can switch fuels though electricity markets in Florida, New England, and New York have significantly larger shares of fuel-switching CCGTs than the US average. In Florida, for instance, CCGT provide 69% if the states total generation and almost 56% of these plants can switch fuel.

In New York and New England collectively, CCGT account for 32% of installed capacity and 39% of regional capacity. But while 41% of New York's CCGT can switch fuel, in New England it is only 28%.

In other regional power markets, gas-fuelled capacity has a smaller share of total generating capacity, and distillate fuel oil is less readily available. In these markets, the option to fuel switch is less common, and fuel diversity is achieved across a fleet of generators as opposed to within generators, EIA analysts explained.

Gas peaking plants, or open-cycle gas turbine (OCGT) units, provide for substantially less output than CCGT although they play an important role in balancing the grid during high-demand periods. In Florida, 94% of this gas peakers can switch fuel while in New England and New York, the fuel-switching share of natural gas combustion turbines averages 80% – almost twice the national average of 45% for that technology. ■



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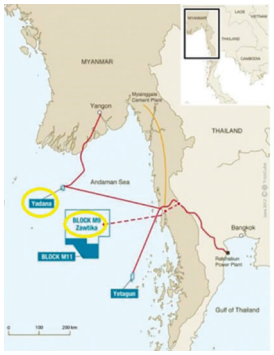
from mid July 2025, and the regasification capacity will increase to 800 GWh per day. As part of the expansion project, Grain will be commissioning a second cryogenic unloading line – and will be the only terminal in Europe able to perform simultaneous unloads.

Already today, the site in Kent hosts largest terminal in Europe and eighth largest in the world by tank capacity, on an area spanning over 600 acres. Regasified LNG imported though the Grain terminal has direct access to the UK's NBP – one of Europe's largest trading hub next to the Dutch TTF.

National Grid, the electricity transmission operator in England and Wales, makes sure gas and electricity is transported safely and efficiently from where it is produced to where it is consumed. Grain LNG is of strategic importance for Britain's gas supply with the terminal exporting a daily average of 431 GWh of gas in April, nearly 10 GWh more than its previous record set a year ago. ■

Risk mounts for Thai power sector as PTTEP struggles with gas supply

PTT Exploration & Manufacturing (PTTEP) is struggling to supply enough fuel for Thailand's power sector, Fitch Options warns. TTTEP took over the Yadana gas field in Myanmar from Total and Chevron in 2021, and analysts reckon the company may not have enough financial resources to upgrade pipelines and ensure steady gas flows from the field to its Thai home market.



Apart from a majority stake in the Yadana gas field, PTTEP also owns 80% in the Zawtika gas field. Both fields are situated in Myanmar and contribute to 11% and 6% of Thailand's total gas supply, taking into account only piped gas imports and domestic production.

Considering the politically unstable situation in Myanmar – Thailand's main source of pipeline gas supply – Fitch analysts expect "downside risks to Thailand's gas supply, and consequently gas power generation. "Domestic gas supply has also dipped, exposing Thailand's gas power sector to more international gas imports and leaving the power market more vulnerable to supply challenges," analysts added.

Resorting to LNG imports

In April this year, PTTEP took over operations at Erewan – Thailand's largest gas field from Chevron after the US upstream giant exited several projects in the region. A messy transition has caused a drastic drop in the block's gas output, with analysts warning this will be "hard to reverse." But output from the Erawan gas field fell by over 50% in February, compared to pre-year levels. Over the first three months of this year, Thailand's state gas companies consequently had to step up LNG imports by 3% in an effort to make up for parts of the supply shortfall.

"A dipping domestic gas supply coupled with increasing exposure to the surging gas prices in the international market will present further challenges to Thailand's gas power sector's ability to obtain affordable and steady supplies of natural gas for electricity generation," said Fitch, pointing to sustained high prices on global oil and gas markets.

Gas to stay main power source

With 2,650 MW of new gas-fired power generation capacity due to become operational from two Gulf Energy-owned plants later this year and in 2025, the demand for natural gas will increase further. "If the demand from the gas power sector is unmet, Thailand will need to tap into other power sectors to ensure the electricity supply matches the growing expected demand.

"At the moment, we forecast gas to remain the main power generation type in Thailand, growing from 113.9 TWh in end-2021 to 138.5 TWh in 2031 at an annual average rate of 2%," noted Fitch. But to ensure steady supply in the long-run, Fitch recommends Thailand should strengthen both its renewable energy sector and expand interconnectors to be able to import the electricity that cannot be produced in the country. ■

Poland terminates Yamal gas pipeline contract with Russia's Gazprom

The Polish government has adopted a resolution to terminate an agreement with Gazprom to receive Russian gas via the Yamal pipeline. "We prepared ourselves to end the contract with Gazprom at the end of 2022 and buy no more gas from Russia," Poland's climate minister Anna Moskwa said, stressing the move would not affect flows to Germany.

Poland had refused to comply with the Kremlin's demand to pay for Russian gas deliveries in roubles, and Moskwa said the resolution to end the so-called Yamal contract was "the natural consequence" after Russia breached the contract by halting supplies.

The Polish section of the Yamal pipeline that links Russia with Germany is owned by a joint venture of Gazprom and PGNiG but it is operated by Poland's state-owned gas transmission company Gaz-System since 2010. The Polish TSO successively sought to increase its control over the pipeline and in early 2022, Poland adopted a law which gave Gaz-System the right to "exclusively use" the asset – partially also for reverse flows from Germany after Gazprom halted supplies to Poland.

Gazprom cut supplies amid payment row

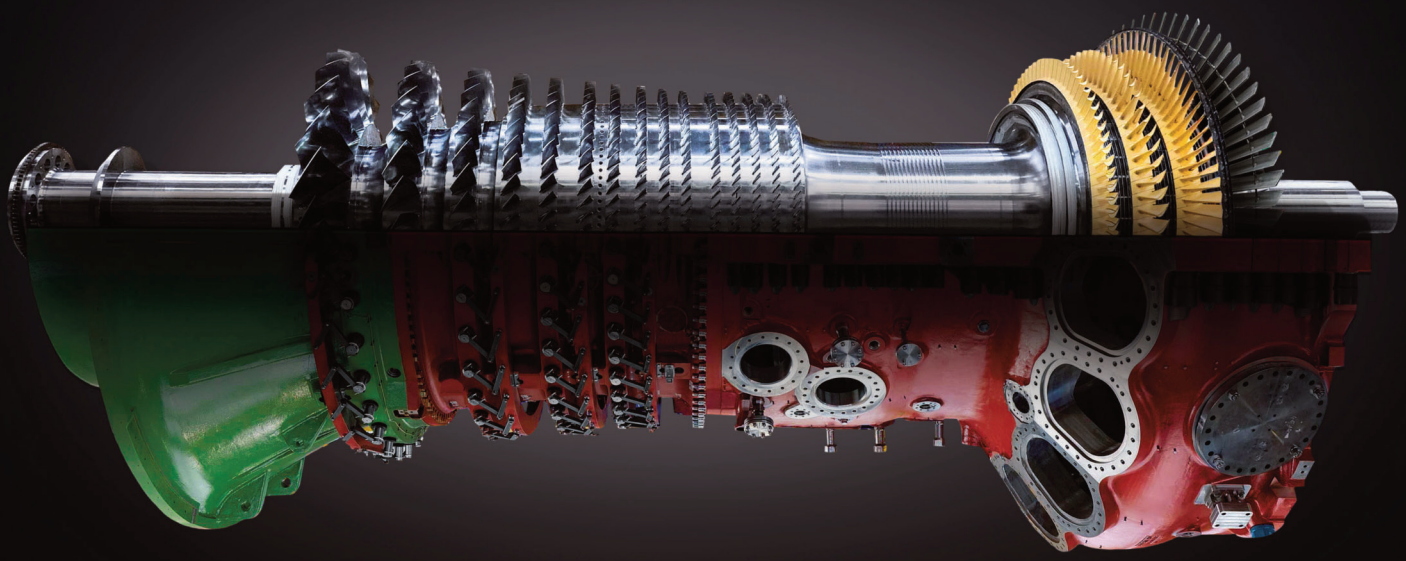
On April 27, Russia's state-run Gazprom suspended supplies to both Poland and Bulgaria due to their refusal to pay in Russian roubles. Poland's state gas company PGNiG was given notice just days in advance that deliveries through the Yamal-Europe pipeline would stop. The 33 bcm/y interconnector carries Russian gas through Belarus and Poland to Germany.

"When Russia de facto breached the terms of the contract by cutting us off from deliveries, the Polish government considered it non-binding due to important conditions being broken," Moskwa said, calling the government's move to terminate the gas supply contract "the logical next step."

Prime Minister Mateusz Morawiecki had dismissed Gazprom's move to halt Russian gas supplies as "barely a threat" given that Poland has been diversifying supplies, e.g. through the Swindowskie LNG import terminal. "There will be no shortage of gas in Polish homes," he said also because new a gas pipeline from Norway will become operational later this year. ■

ITALIAN ENERGY

BRIGHTER FUTURE



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Wärtsilä tests green hydrogen/gas blend at Capwatt CHP in Portugal

Test runs to fuel Capwatt's power station in Maia, Portugal, with a blend of up to 10% green hydrogen and natural gas will be carried out by Wärtsilä together with the plant operator starting from the first quarter of 2023. The combined heat and power station (CHP), powered by a Wärtsilä 34SG engine, provides energy for the Sonea Campus.

Currently, the engine is running on natural and the pilot project will be one of the first cases where green hydrogen is used to lessen the carbon footprint of an existing gas-fuelled Wärtsilä power plant.

Today, the 34SG engine installed at the plant can run on up to 3% hydrogen but modifications will need to be made to reach the targeted level of 10% blending. This requires modification to the engines' combustion system, as well as its control system and the plant automation system.

Going forward, Capwatt intends to produce green hydrogen using an electrolyzer, powered by renewable energy. "We are committed to decarbonising our operations and we see the blending of hydrogen and natural gas for fueling this plant as a significant step towards achieving this goal," said Capwatt's CEO Sérgio Rocha.

The project is in line with Portugal's National Hydrogen Strategy, aimed at increasing the share of hydrogen in energy consumption by 5% by 2030 in the industry sector. During the coming decade, the target is to have 2.0 to 2.5 GW of installed hydrogen producing capacity, and to have 10 to 15% hydrogen injected into the natural gas grid.

As one of Portugal's independent power producers (IPP), Capwatt owns and operates nearly 160 MW of cogeneration plants that stand to benefit from the know-how gained at the Maia project.

Most Wärtsilä engines can be operated on hydrogen/natural gas blends with up to 25% hydrogen, the company said, stressing its aim to achieve pure hydrogen operations by 2025. At a testbed in Singapore, it has gas engines that can run on up to three per cent hydrogen, a figure that is said to rises to 25% after "certain modifications." ■

GE to upgrade four 9F gas turbines at EGA's Al-Taweelah power plant

Four 9F gas turbines EGA's Al Taweelah power plant in the United Arab Emirates (UAE) will be modernised with GE's Advanced Gas Path technology. The AGP upgrade is meant to boost the plant's output by up to 72 MW for the same amount of fuel consumed from previously 920 MW, while reducing emissions by up to 74 tonnes.

The AGP upgrade on the four turbines will improve hardware and software to drive operational flexibility and increase output, efficiency and availability. The project will be first applied to F-class gas turbines in the UAE, after having been implemented on six smaller E-class turbines. GE will also implement the "Live Outage" concept, a digitised platform that replaces the paper-based approach, reducing the risk of mistakes or rework, and speeding up the outage process for customers.

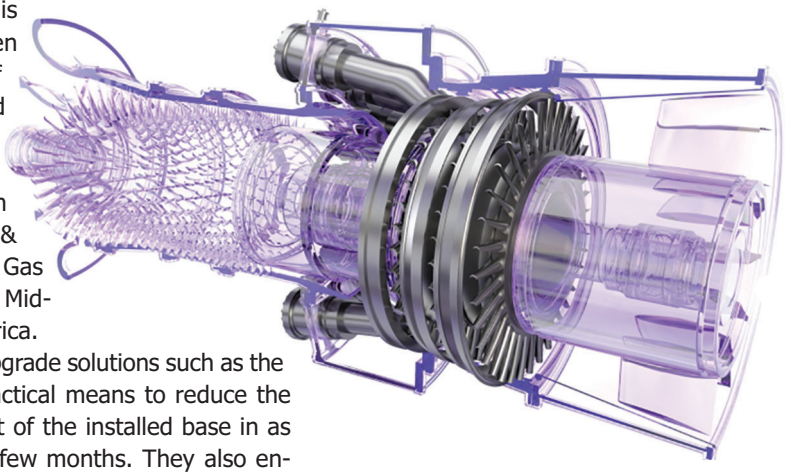
Once the work is complete, power output from the four turbines is expected to increase to nearly 1,000 MW, while greenhouse gas emissions will be reduced by up to 74 thousand tonnes annually, the equivalent of removing more than 16 thousand cars from the UAE's roads.

EGA is the world's biggest 'premium aluminium' producer, and the company has captive power plants at both Jebel Ali and Al Taweelah to meet its electricity needs. It is the biggest electricity generator in the UAE after the Dubai and Abu Dhabi utilities.

TAQA, Dubal plan to buy EGA's power assets

In March, Abu Dhabi National Energy Company (TAQA) and Dubal Holding announced plans to acquire EGA's power generation assets in the UAE, including the Al Taweelah power plant. All electricity from the assets would be supplied to the grid under a long-term power purchase agreement.

"Billions of dollars have been invested in the existing installed base of gas power generation assets in the UAE and around the world. This equipment often has lifespans of 20-40 years and will not all simply be retired," said Joseph Anis, President & CEO of GE Gas Power Europe, Middle East and Africa.



"However, upgrade solutions such as the AGP offer a practical means to reduce the carbon footprint of the installed base in as little time as a few months. They also enable gas infrastructure to continue to play a critical role in the energy transition by complementing variable renewable energy resources with reliable, flexible, on demand power that can help with grid stabilization."

Under the service agreement, GE will provide repairs, maintenance and parts for ten 9F gas turbines, ten generators and other equipment at the plant. The collaboration represents a continuation of the services that GE has already been providing at the site since production began in 2009. ■

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First two M501JAC gas turbines start up at Jackson Generation Project

The first two Mitsubishi Power M501JAC gas turbines, manufactured in North America, have reached commercial operation at J-POWER USA's Jackson Generation Project, a 1,200 MW combined-cycle power plant in Elwood, Illinois. The Jackson CCGT dispatches power into the PJM regional market zone and generates enough electricity for 1.2 million homes.

The flexible gas combined-cycle plant reduces Illinois' dependence on coal-fired power and supports the state's commitment to grid-integrate more intermittent energy supply from wind and solar power sources.

Exceptional team work

Plant operator Mitsubishi Power, and the project's engineering, procurement and construction contractor Kiewit Power together developed and signed a Charter to commit to honest and professional behaviour – individually and as a team – to build the new plant. This helped to deliver the CCGT safely on time and on budget.

"The engineering, project execution, and teamwork for Jackson Generation have been exceptional," said Mark Condon, President and CEO of J-POWER USA. "Mitsubishi Power and Kiewit have worked closely and transparently with the Jackson commissioning crews throughout the global pandemic to overcome the impact that it has had across the entire supply chain."

View of Jackson Generation Project in Elwood, Illinois

High fuel-efficiency

Driven by M501JAC gas turbines, the Jackson CCGT is said to be "one of the most fuel-efficient natural gas power plants in the world," according to the plant operator. The JAC turbine has an efficiency rating greater than 64% in combined cycle and the lowest emissions in its class.

The Jackson Generation plant will hence be up to 50% more efficient than peaking plants and will produce more than 65% less carbon dioxide than a legacy coal-fired power plant.

Remote monitoring will optimize operation, allowing the plant to flexibly respond to fluctuating energy demand and renewable energy supply. It allows the operator to detect anomalies and diagnose plant performance with a view to reduce maintenance costs. ■

MYTILINEOS, Siemens Energy partner on 560 MW project in Poland

Greek engineering and metallurgy company MYTILINEOS, in consortium with Siemens Energy, has signed an EPC contract worth about €202 million to build a combined-cycle power plant in Grudziadz, Poland. The plant operator Energa, part of Olen Group, aims for the 560 MW gas power unit to enter commercial operation within 38 months after contract signing.

The CCGT will be the first power plant project for MYTILINEOS' Sustainable Engineering Solutions (SES) Business Unit in Poland. The Greek company has ample experience in the construction of CCGTs, both for third parties and on its own behalf, having built a series of thermal projects across Europe, Africa and Asia.

Daniel Obajtek, President of ORLEN's management board, said the modern CCGT project Grudziądz will complement the utility's portfolio of renewable energy sources.

Looking at the technical design of the plant, the CCGT will consist of one gas turbine and one condensing steam turbine, using a closed, wet mechanical draft cooling tower arrangement and construction of a gas installation in the power plant area with accompanying infrastructure. ■

JERA readies commissioning of LNG feeder pipeline for Anegasaki plant

Japan's largest power producer JERA has announced completion of the Nanohana Pipeline – built by Keyo Gas and Otaki Gas. The 31-kilometre long pipeline runs from JERA's Futtsu LNG terminal to the Anegasaki power station in Chiba Prefecture and JERA will assume the operation of the pipeline, once it starts operating this June.

Units 1-3 at Anegasaki Power Station are currently in the final stages of construction by Mitsubishi Hitachi Power Systems (MHPS). Three 650 MW combined-cycle gas power units will replace four ageing units at the plant, and are due to start operations successively from early 2023.

Anegasaki power station in Chiba prefecture

The turnkey project is carried out jointly by MHPS and Mitsubishi Electric, which will supply three generators and control systems. Works are conducted under a full turnkey EPC (engineering, procurement, and construction) contract. As for the scope of supply, MHPS specified the three gas turbines and related equipment will come from its Takasago Works, the three steam turbines are sourced from Hitachi Work, and the heat recovery steam generators and exhaust gas denitrizer systems from its Kure Works.

The JAC gas turbines used for this project are equipped with a forced air-cooled combustor system. Air emitted from the combustor casing is cooled in an external cooler, and the pressure boosted in a forced air-cooled compressor, after which the air is used to cool the combustor, and returned to the casing. "This process optimizes the cooling structure," MHPS underlined, adding the system also includes turbine blade cooling through an extra thick film thermal insulation coating, and high-pressure compressors. According to the manufacturer, "this allows for shorter start-up times compared to steam cooling methods, and improves operational efficiency." ■

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