



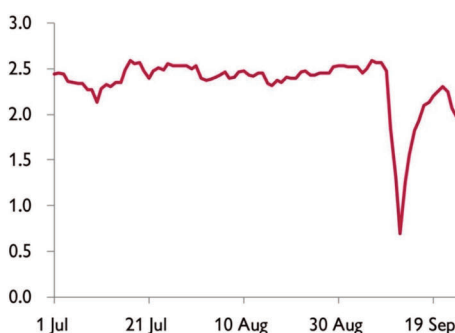
Henry Hub rallies on tighter GOM balances in wake of storm Helene

November gas future contract at Henry Hub has soared to \$2.932/MMBtu after the tropical storm Helene made landfall with a windspeed of 140 mph in Florida's Big Bend region just before midnight last Friday. Though LNG infrastructure was not impacted, offshore gas production in the US Gulf of Mexico (GOM) fell by nearly 10 bcf as developers took precautions.

Sentiment at Henry Hub has been closely tied to the development of the storm. The Cal-25 Henry Hub curve has moved up by \$0.15/MMBtu and was last seen trading above \$3.25/MMBtu – despite an end-October 2025 storage carryout at 3.73 trillion cubic feet.

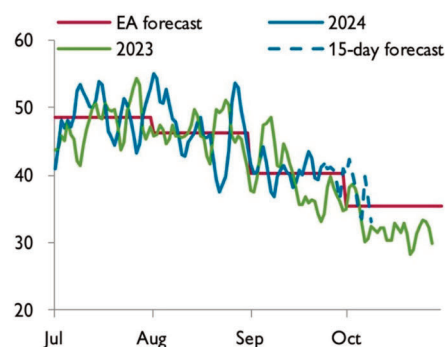
Shell had rushed to shut-in its Appomattox and Stones production platforms, which account for 50 mmcf/d of natural gas output, and evacuated non-essential personnel from the Mars Corridor platforms. Output from Appomattox and Stones amounts to about 250 mmcf/d, equalling almost 50% of Shell's output in the US Gulf region.

Gulf of Mexico production, bcf/d



Source: Ventyx, Energy Aspects

Gas power burns, bcf/d



Source: Spire, Energy Aspects

Force majeure at Station 302 lowers supply balance

The price rally at Henry Hub was partially caused by a force majeure on NGPL Station 302 in Montgomery County, Texas, which lowered gas flows from 1.2 bcf/d at full capacity to 0.4 bcf/d until further notice. Most of the natural gas flowing through the NGPL pipeline is the SPLIQ demand metre feeding Sabine Pass LNG.

"Delivery capacity for that metre is roughly 0.8 bcf/d, meaning

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JOGMEC commissions feasibility studies for overseas CCS projects

Japan Energy and Metals National Corp (JOGMEC) has commissioned feasibility studies for the Oceania and the Northern Offshore Malay Peninsula CSS projects. Mitsubishi and ExxonMobil will lead the first venture, seeking to capture and store CO2 from industries in Ise Bay and Chubu region, while Petronas, Mitsubishi, ENEOS and JX Nippon will work on the second CCS project off northern Malaysia.

Setting up an overseas Carbon Capture and Storage (CCS) value chain is a high priority for Japanese electric power producers, industry and equipment manufacturers alike.

The shipbuilding arm of Mitsubishi already launched a test ship for transporting liquefied carbon dioxide and demand for LNC02 carriers is expected to grow fast. Mitsubishi Shipbuilding is responsible for the ship's design and construction, drawing on its expertise in gas handling technologies. ENEA, the Engineering Advancement Association of Japan, agreed to charter the ship while K-LINE and Nippon Gas Line will carry out



Illustration courtesy Mitsubishi Shipbuilding Co.

R&D on pressure control, stability, and low-cost transportation of liquid CO2.

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that feedgas deliveries should be unaffected," analysts at Energy Aspects commented. "But the 0.4 bcf/d of missing South Central and Midcon supply will tighten Henry Hub's physical balances further east until the issue is resolved."

Analysts now anticipate US Lower 48 gas production to average 100.6 bcf/d in September, some 1.2 bcf/d lower month-on-month. Earlier this month, Hurricane Francine made offshore GOM gas production lose 10 bcf of regular production while latest Hurricane Helene is expected cause further declines in oil and gas output over

the coming weeks. Offshore gas flows are not expected to recover to their early-September baseline, sustaining the bullish sentiment at Henry Hub.

Rally driven by paper markets, gas-burn up marginally

On the demand side, gas-burn for generating electricity has only marginally risen since the start of the Henry Hub rally. Analysts raised their estimate for gas-to-power demand by approximately 25 bcf. "We do not believe the shift in power-burn over the past week can support a

\$0.20/MMBtu rally in the prompt contract," analysts commented, noting there might be further change in the week ending October 4.

Milder weather knocked 20 bcf off forecast gas demand from the power sector, but lower nuclear power contribution in the coming weeks could lift gas-burn as could an early start of the re-fuelling season. Still, "the limited shift in fundamentals that does not justify a \$0.20/MMBtu jump in short-term dated contracts," analysts stressed, meaning the move is believed to be largely driven by the 'paper markets.' ■

Avangrid deploys line-crews after Hurricane Helene left millions in the dark

Avangrid's electric utilities in New York, Connecticut, and Maine have sent fast help after the Category 4 Hurricane Helene left millions without electricity in the US Southeast. Some 73 line-crews were deployed to help clean up damage and will rush to restore electricity to customers in Virginia and North Carolina as soon as they arrive.

Restoring electricity after a major storm is a complex task, and requires significant logistical expertise, skilled line-workers, and specialized equipment.

Power generators, utilities and industrial power producers that are affected by significant outages often turn to the in-

dustry's mutual assistance network – a voluntary partnership of electric companies from across the US and Canada – to help speed restoration. For example, Avangrid companies sent crews to assist in storm recovery efforts after Hurricane Fiona devastated Nova Scotia in 2022.

"We are committed to restoring power whenever and wherever help is needed," said Pedro Azagra, Avangrid CEO. "Mutual assistance is an essential part of any wide-



Safety briefing with Avangrid crews

scale power restoration effort." In total, 198 internal line workers, damage assessors, and support staff will be supporting recovery efforts. Each line crew consists of a team of two line-workers. ■

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Gas to Power Journal

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In an open call for 'Engineering Design Work for Advanced CCS Projects' earlier this year, JOGMEC asked developers to come forwards and propose projects along with a feasibility study to capture CO₂ emitted in Japan and export it abroad. The five selected companies will now examine specific CO₂ separation and recovery destinations, overseas storage destinations and related technologies.

The explicit aim is to take financial investment decisions (FID) by 2026 on first projects, and start storing the CO₂ from financial year 2030.

Petronas and TNB develop post-combustion CCS

Malaysia's state oil firm Petronas and the utility Tenaga Nasional Bhd (TNB) are exploring carbon capture and storage (CCS)

technology with a view to retrofitting gas-fired power plants. Though Malaysia aims to reach Net Zero carbon emissions by 2050, domestically-produced gas is deemed critical for the country's energy transition.

Fast-ramp gas power plants will help integrate fluctuating electricity supply from renewables and guarantee a stable baseload power source. Retrofitting gas-fired power units with CCS hence helps TNB to extend the life-time of these assets.

The same logic applies to multiple gas-fired power assets across the Asia Pacific regions, hence JOGMEC and Japanese utilities and equipment manufacturers are keen to set up CCS value chains, leveraging Japanese combustion and carbon capture technology and expertise in shipping hydrocarbons as well as liquid CO₂. ■

UNEZA to invest \$116 billion per year in clean power

Partners within the New-York-based Utilities for Net Zero Alliance (UNEZA) have decided to invest more than \$116 billion per year in clean power generation and power system grid infrastructure. Partners of UNEZA include 32 of the world's largest utilities and energy companies, with 48% of the investment committed targeting power transmission infrastructure.

Alongside firm investment commitments – \$60 billion on renewables and over \$56 billion on grids annually between 2025 and 2030 – UNEZA members published a statement with recommendations to policymakers on how to alleviate supply chain constraints.

Grids are, in fact, the restraining factor to facilitate the build-out of wind and solar power sources. According to the International Renewable Energy Agency (IRENA), investment for power grids and flexibility requires \$720 billion per year and investment in renewable power generation capacity requires \$1,550 billion per year on a global basis to stay within 1.5°C Scenario by 2030.

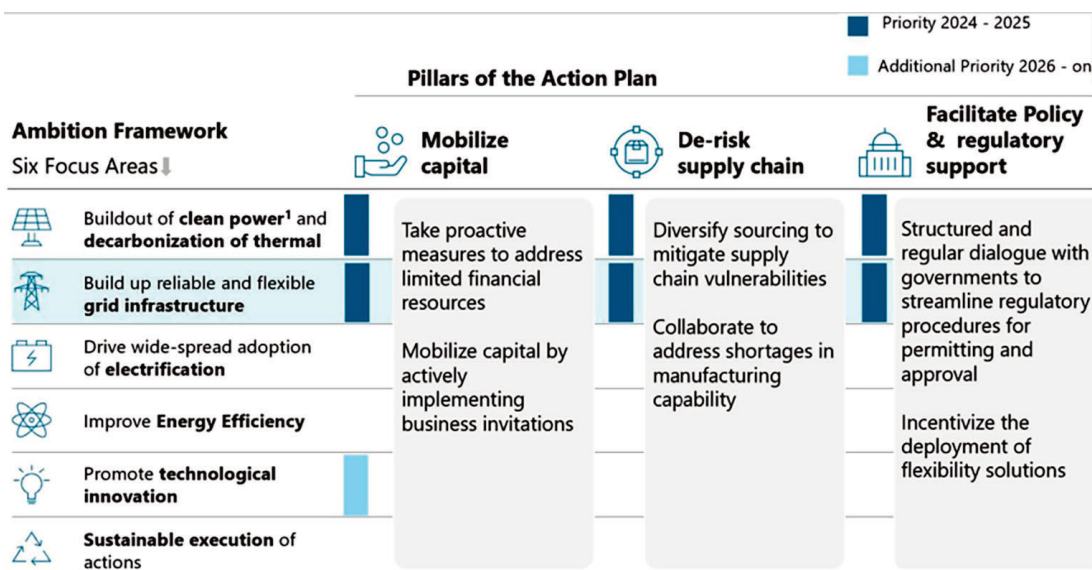
Investments into power grids and flexibility requires \$720 billion per year and investment in renewables another \$1550 billion per year on a global basis to stay within 1.5°C Scenario by 2030, the International Renewable

Energy Agency (IRENA) calculated. The bulk of that capital expenditure will have to come the private sector.

As a collective UNEZA now committed to firm investment in both grids and renewables – not least to capacity expansion among equipment manufacturers.

Key challenges for ensuring resilient sup-

ply chains are the availability of critical minerals and materials, the scaling up manufacturing capacity, and the development of a skilled workforce. The New-York-based association urged policymakers frame encouraging regulations to make industry modernise their business models and mobilise greater investment. ■



Quinbrook chooses GE batteries for Supernode project in Queensland

Quinbrook Infrastructure Partners has chosen a GE-made battery for the second stage of their Supernode project in Queensland. The hybrid project creates battery energy storage system (BEES) for a new data centre – once complete, the

750 MW BESS with a runtime of 2–4 hours will be one of the largest of its kind in the Australian electricity market.

Construction of this 250 MW/1,000MWh battery storage system is the second stage of the project out of three.

The order follows a contract award in early 2024 for GW to integrate a 250 MW/1,000 MWh battery for stage 1 of the project, with works already underway.

Ed Torres, Business Leader of GE Vernova's Solar & Storage Solutions business sees the project as a testament to the strength of GE's capabilities in this space. "We expect to continue to be a valued and trusted collaborator for large grid-scale integrated BESS projects in the region and around the world," he underlined.

For the Supernode project, GE Vernova is responsible for the supply and commissioning of the power conditioning systems, power plant controller SCADA systems, and capacitor bank\harmonic filter as well as integration engineering and GPS connection support.

Quinbrook is a specialist investor in renewables, energy storage and power grids. It owns and executes projects in the United States, UK, and Australia. ■

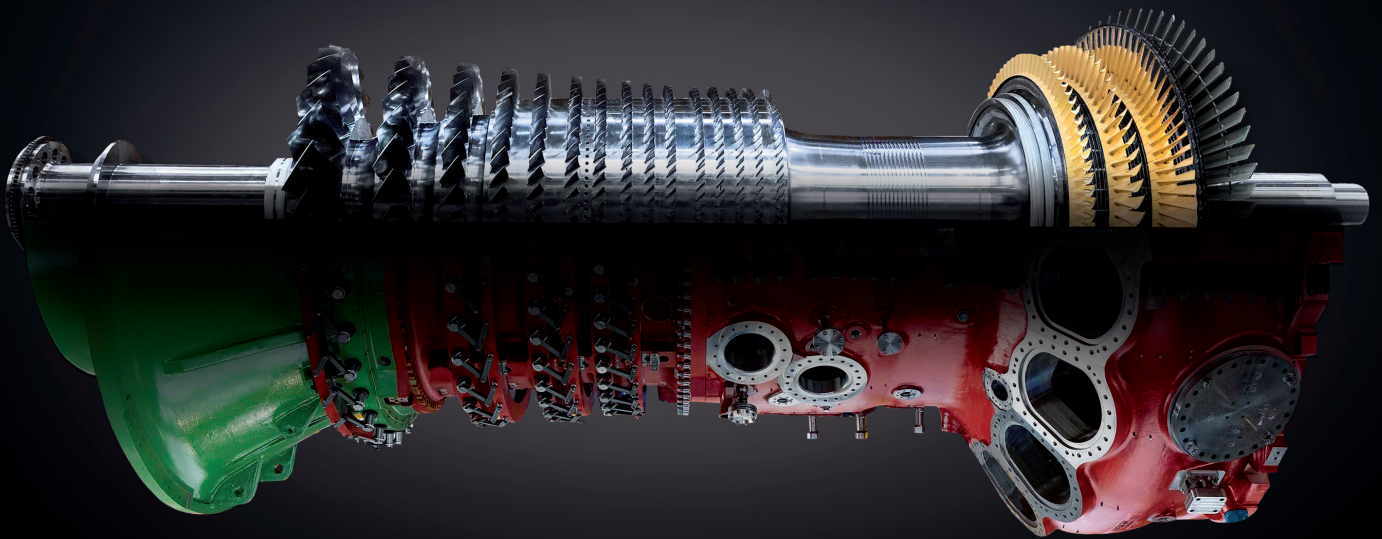


Render of Quinbrook's Supernode project

— ITALIAN ENERGY —

BRIGHTER FUTURE

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Osaka Gas and MHI team up to visualize traded CO2

Osaka Gas has teamed up with Mitsubishi Heavy Industries (MHI) to visualise traded carbon dioxide (CO₂) through the industry's first digital platform CO₂NNEX. As the private sector started to use clean gas certificates in April, Japanese city gas suppliers need a system to specify production volume and purity of e-methane and other carbon recycles fuels like SAF, and green LPG.

Osaka Gas aims to introduce e-methane, which accounts for 1% of the city gas it delivers, by 2030.

As the value of e-methane is bound to rise significantly in the future, MHI wants to expanding the use of this platform to not only manage e-methane attribute data but also transfer environmental value of other e-fuels.

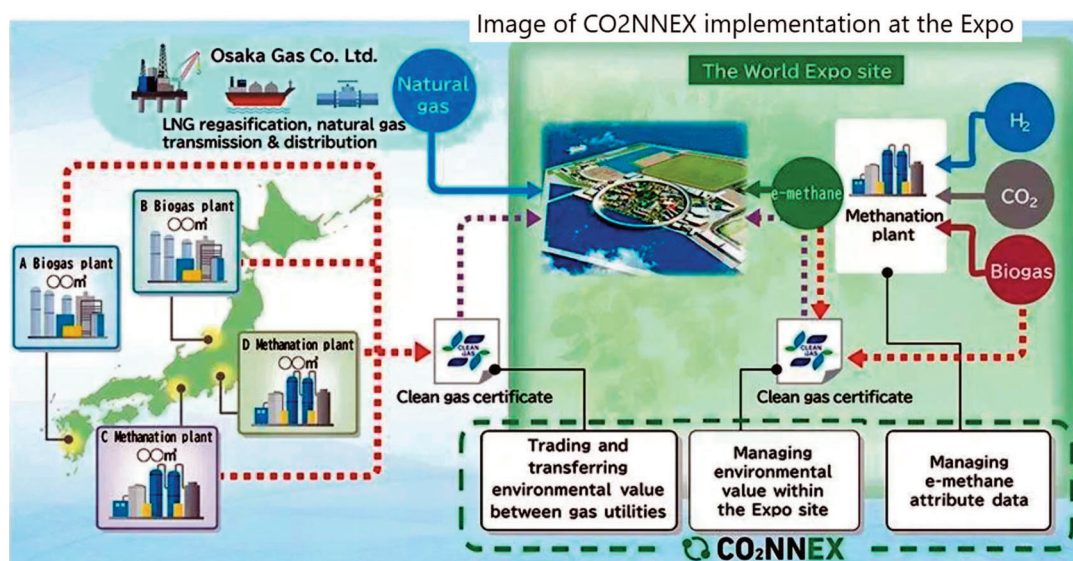
Carbon capture and storage (CCS) as well as utilisation of the captured carbon is becoming more cost-effective and easier to handle by power generators – broadening the value chain of carbon recycles fuels. And as sustainable aviation fuel (SAF) and green liquid petroleum gas (LPG) gets more widely used in the transport sector, a system is needed to allow industry trade these fuels and transfer value for such transactions.

In terms of regulation, non-fossil fuel certificates for electricity are also being introduced for

natural gas. CO₂NNEX developers said the platform can facilitate the trade of such clean gas certificates. The Japan Gas Association said it will provide guidance to companies regarding the functions installed in this platform and how to implement them.

The platform will be officially launched at Expo 2025 Osaka and during the tradeshow,

Osaka Gas will provide the guesthouses and other facilities with on-site-produced e-methane while the platform will track the environmental value created during test use. Moreover, the environmental value of e-methane and biogas produced by city gas companies around Japan will be transferred to Osaka Gas, further contributing to the carbon neutrality of the Expo 2025. ■



GE shortlisted for \$1m funding to develop AI Assistant for H2 permitting

US Department of Energy (DOE) has shortlisted GE Vernova for an award to develop an AI Assistant for permitting and hydrogen deployment. The three-year, \$1 million H₂Net project includes Clemson Uni as well as Roper Mountain Science Center and is expected to train and validate the AI tool with lessons learned at GE's gas turbine manufacturing centre in Greenville.

The AI Assistant HySAGE, short for Hydrogen Smart Assistant for Governance Execution, will be trained and validated against GE's experience with co-firing hydrogen at its utility-scale gas turbines. Modelling and operational flexibility is meant to allow the AI tool to incorporate all necessary codes and standards and envi-

ronmental scenarios.

U.S. Secretary of Energy Jennifer M. Granholm said the government's investment in clean hydrogen would show the Biden's administration's commitment to making clean energy a 'win-win' for all American. She underlined "these projects will work hand in hand with historic investments in the Hydrogen Hubs and electrolysis technologies."

"The success of our regional clean hydrogen hubs—and the national clean hydrogen strategy—hinges in large part on advances in technology that will grow clean hydrogen's economic potential," said Dr. Sunita Satyapal, director of DOE's Hydrogen and Fuel Cell Technologies Office. Safe and efficient permitting is

paramount to expand clean hydrogen infrastructure across the US domestic market.

"By identifying ways to address siting and permitting challenges, these projects will complement other large-scale investments in clean hydrogen by the Biden-Harris administration and will play a vital role in contributing to our nation's clean energy future," he vowed.

Jereme Wetherby, Carbon Solutions leader at GE Vernova specified the company's project "seeks to reap the benefits from AI and explore innovative ways to handle hydrogen deployment safely, while investing in trainings for the community and our workforce." He expressed gratefulness towards the collaboration with Clemson University and Roper Mountain Science Center, which will contribute their expertise in AI and large language models. ■



EnerMech to help Exxon boost diesel and hydrogen output at UK refinery

EnerMech has been chosen as service contract supplier to KENT Energies for ExxonMobil's new low sulphur diesel facility at its Fawley refinery, designated to boost output by 38,000 barrels per day (b/d). A new hydrogen plant is part of the project, lowering Britain's reliance on diesel imports and facilitating future production of sustainable aviation fuel (SAF).

Focussing on safety, quality, cost, and technical requirements, EnerMech's team will provide a single point of accountability within their scope for the brownfield project.

Engineers and project managers will work inside the facility and deliver construction, pre-commissioning, commissioning, and start-up services on key components – notably the diesel hydrotreater, steam methane-reforming hydrogen plant, diesel storage tank and amine treatment system.

Bespoke System Integrity Management (SIMPro) software will be used to trace and to record data on flange management, bolt

torque/tensioning, on-site machining, nitrogen purging, camera inspection, and hydro-testing. The web-based management is significantly faster and more accurate than systems used earlier.

CEO Chuck Davison pointed out the contract not only partners EnerMech with the world's largest oil firm in one of the UK's most strategic petrochemical sites. "It also utilises our core services on

a hydrogen system, which is a first for our organisation."



View of Exxon's Fawley refinery

Quest One and MAN open new hydrogen Gigahub in Hamburg

Electrolysis specialist Quest One, part of MAN Energy Solutions, has opened its new 'Gigahub' for the serial and automated production of electrolysis stacks in Hamburg-Rahlstedt. Series production of stacks – the technological centrepiece of an electrolyser – helps make more green hydrogen (H2) available in a bid to accelerate the German energy transition.

Coinciding with the opening of the new production site, H-TEC SYSTEMS has changed its name to 'Quest One'.

From hand-made to automated production

Speaking at the opening ceremony, the German chancellor Olaf Scholz said Hamburg-Rahlstedt was sending out a signal. "Until now, electrolysers have been made by hand. If the step towards automated production on an industrial scale is successful, the costs and time required will fall substantially.

Serial production should reduce the production time here in Rahlstedt by 75%, Scholz said, calling the project "a real milestone for the rapid hydrogen ramp-up [which] shows what is possible in our country."

Highly automated production of so-called

PEM electrolysis stacks for producing green H2 is now underway at the new site. Based on Proton Exchange Membrane technology, PEM electrolysis is currently the most widely used process for scaling up H2 production from wind and solar power sources.

Creating a cost-attractive alternative to fossil fuels

Series production of PEM stacks is a precondition for making green hydrogen available in large quantities, and thus becoming an attractive alternative to fossil fuels. Not least because, re-powering the industry in Germany and wider Europe to rely on climate-neutral fuels is a costly and time-consuming undertaking.

Front-runners among the industry will soon be able to invest in onsite renewable energy sources, combined with mass-produced PEM electrolysers and storage – realising economies of scale and leveraging time and cost advantages of three complementary energy sources.



German chancellor Olaf Scholz speaks with MAN executives at the opening of the H2 Gigahub in Hamburg-Rahlstedt

The new production and development site at Hamburg plays a central role in this context. It also is a step towards realising the Quest One mission of avoiding 1% of global greenhouse gas emissions by 2050 through the use of its own electrolysers.

Aiming to produce over 5 GW of PEM stacks per year

At full capacity, the new Gigahub will enable the automated series production of PEM stacks with a potential total electrolysis capacity of over 5 gigawatts (GW) per year.

Stacks split water into oxygen and hydrogen with the help of renewable electricity; and producing them for cheap and at scale is vital for ramp-up of the future hydrogen economy. MAN Energy Solutions' subsidiary in Hamburg is hence also researching new generations of stacks.

Automated stack production takes place on two production lines: "Titan" with a linear transport system and "Gerd" with swivelling arm robots – both named after two moons of the planet Saturn, which itself consists of around 95% hydrogen.

Work steps previously carried out by hand are now automated, lowering the production time of a stack by around 75%. These PEM stacks can now be produced in Hamburg in less than an hour. Automated production also increases efficiency and precision in manufacturing and, allowing for consistently high product quality and fast delivery times.

"The hydrogen economy will change massively in the coming years and decades, and we will be dealing with volumes that are almost unimaginable today," Quest One CEO Robin von Plettenberg said, calling the electrolysis industry "one of the key industries of the future."

Ansaldo powers up Germany's grid resilience at Marbach

Italian turbine maker Ansaldo Energia has announced the start of commercial operation of the Marbach gas power plant, built on behalf of the German regional utility EnBW as a grid stabilisation plant in Marbach, north of Stuttgart. Marbach is a 300 MW simple-cycle thermoelectric plant equipped with an AE94.3A gas turbine and generator.

Like the Uniper-operated Irsching 6 reserve plant, also built by Ansaldo, the Marbach plant has the sole purpose of stabilising the power network and is only dispatched on request of the grid operator. Grid-synchronisation of the 300 MW Irsching plant occurred in May last year, followed by first firing of the gas turbine and commissioning of the plant.

Over 16 months delayed

Works at Marbach were beset by delays. Worldwide delivery difficulties, material shortages, factory closures and staff shortages have led to delays in construction work," EnBW said earlier, conceding that "despite additional staff and parallel work, the set construction schedule will not be met." Completion was originally scheduled for October 2022, but even at the start of 2024 EnBW was unable to specify a re-

vised start-up date.

The Marbach open-cycle power plant is designed to operate in gas shortage situations by using oil and eventually green, decarbonized liquid fuels such as HVO (Hydrogenated Vegetable Oil). Its fast-ramp capability helps ensure a stable grid, with NOx emissions that remain below 50 mg/Nm³.

AE 94.3A gas turbine can guarantee high flexibility to the plant, with a ramp-rate of 50 MW/min and reaching full load in 26 min-

utes. Installed in over 110 power units, the turbine has accumulated more than 5 millions equivalent operating hours (EOH). Ansaldo entire fleet is set up for mix combustion with hydrogen: the AE 94.3A turbine, in particular, can reach a 40% mix. ■



EnBW's new Marbach grid-stabilisation plant near Stuttgart

RPower and Wise to provide powered-land solutions in ERCOT

Texan backup power provider RPower and Wise Asset (WA) have agreed to use land controlled by WA to provide gas-fuelled backup power solutions to meet the projected 60-plus GW of load growth in the ERCOT market between now and 2030. The aim is to help grid operators handle growing electricity demand from large end users, e.g. data centres and heavy industry.

TPower and WA said their so-called "powered-land solution" will include all necessary land and power generation permitting, utility interconnections, gas interconnections, and design and engineering for a utility-scale natural gas-fired power generation facility to serve customer load. The power facility will be designed to provide either prime or backup power as soon as 2027.

Pilot project in Dallas-Fort Worth

"Through our collaboration with RPower, we are adding natural gas power generation and retail electric offerings to our select land holdings and intend to be your 'easy button' for these de-risked utility-scale assets," said Grant Huber, Energy Director at WA.

Jamie Smith, COO of RPower specified the solutions will not only serve the growing demand from large energy users but will also serve as a resource to utility grid infrastructure. "These generation assets are well-suited to respond to the demands of managing a grid with increasing levels of intermittent generation and will further enable the energy transition to a carbon-free future," he underlined.

Currently RPower and WA are working to develop over 3,000 acres in the Dallas-Fort Worth region. ■

Jenbacher gas engines re-power Polish CHP

Five of INNIO's Jenbacher J920 FleXtra engines are being installed at the heart of a combined heat and power (CHP) project in Bydgoszcz, Poland. Developed on behalf of the utility PGE Energia Ciepła, the 'Ready for H2' plant will be fuelled by cleaner-burning natural gas and replace the currently used coal-fired unit at the site.

Each of the five CHP units, designed to generate a total of 52.6 MW of electricity, consists of a steam generator, a turbocharger, and an auxiliary module. INNIO has delivered the Jenbacher turbines, and will now assemble the plant, support start-up and commissioning activities and provide operator training

as well as maintenance under a 10-year service agreement.

During the design, construction and installation process, the Jenbacher team has been working closely with the construction firm Polimex Mostostal and its subsidiary Polimex. Together, they are realising the turnkey CHP project, equipped with an electrode water boiler and standby/peak boiler.



PGE Energia's Bydgoszcz CHP

The Bydgoszcz CHP facility will be the largest gas-fuelled power plant using 'Ready for H2' engines to replace a coal-fired plant in Poland. The innovative project is in line with Poland's energy policy of reducing reliance on coal, especially for electricity generation and district heating. ■

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