President Biden celebrated the U.S. offshore wind supply chain during a steel-cutting ceremony for the Acadia, the first U.S.-built subsea rock installation vessel for offshore wind. (Courtesy: Business Network for Offshore Wind)

CONSTRUCTION

Biden celebrates offshore wind at Philly Shipyard

President Joe Biden recently celebrated the advancement of the U.S. offshore wind supply chain during a steel-cutting ceremony for the Acadia, the first U.S.-built subsea rock installation vessel (SRI) for offshore wind. The vessel was ordered by Business Network member Great Lakes Dredge and Dock Corporation (GLDD) and is being constructed at the Philly Shipyard in Pennsylvania. During the ceremony, Biden celebrated the $16 billion of investments made during his administration in offshore wind manufacturing, shipbuilding, and ports, noting substantial growth in the supply chain that is now creating jobs in Indiana, Kansas, Louisiana, Pennsylvania, Texas, and New England.

GLDD's investment into the $246 million vessel garnered the company a 2022 Ventus Award for Supply Chain Advancement for the vessel's new efficiency standards and innovation with its large capacity, accurate placement technology, innovative battery, and alternative fuel system. Headquartered in Houston, GLDD has been in operation for more than 130 years. This vessel construction represents the company's diversification into offshore wind and will fill a substantial need in the growing offshore wind industry.

"The Biden-Harris administration is helping make offshore wind a reality by bringing certainty to the permitting process, making investments in ports and transmission, and incentivizing domestic manufacturing," said Business Network for Offshore Wind CEO Liz Burdock. "Congratulations to Great Lakes Dredge and Dock Corporation for this achievement; we look forward to seeing the vessel finish construction and commence operation in 2025."

Biden also announced the Final Sale Notice (FSN) for setting up an August 2023 auction. These will be the first federal lease areas auctioned in the Gulf of Mexico and, once developed, could support up to 3.7 GW of offshore wind generation.

Despite having no active lease areas, the Gulf has been a leader in developing the U.S. offshore wind supply chain. The Network reports that 23 percent of

TDI-Brooks has increased vessel capacity by adding a 75-meter DP2 vessel, R/V Nautilus. (Courtesy: TDI-Brooks)

contracts in the U.S. market are going to Gulf firms and about $1 billion in investments are flowing to Gulf shipyards or fabrication yards.

"Today's release of the Final Sale Notice for the Gulf of Mexico Lease Areas marks an exciting new front for offshore wind in the United States," said John Begala, the Network's vice president for Federal and State Policy.

"With its long history of offshore construction, engineering expertise, and environmental monitoring and data collection, introducing the Gulf of Mexico and the region's experienced professionals to the offshore wind market will drive new innovations and opportunities for the industry. BOEM's inclusion of the supply chain, workforce, and fishery bidding credits demonstrates their continued commitment to seeing offshore wind develop in an equitable and inclusive manner."

MORE INFO www.offshorewindus.org

CONSTRUCTION

TDI-Brooks increases vessel capacity

TDI-Brooks has increased its vessel capacity by adding a 75-meter DP2 vessel, R/V Nautilus (formerly Nautical Geo), to its fleet. The market for subsea services remains strong, coupled with increased demand from clients and the need for increased capabilities. The vessel can potentially offer a variety of offshore assistance with subsea services, construction aid, exploration, production, ROV and diving support, and scientific marine research and survey mapping, along with military support.

This vessel is about 60 percent through its retrofit period in Las Palmas. It will finish its shipyard period in late September and then transit to

Funding rounds from EnerKite and Kitemill have attracted a combined 2 million euros with more than 1,000 investors globally. (Courtesy: Airborne Wind Europe)

Trinidad for several geotechnical coring projects. One of these programs will involve spudcan analyses using the recently delivered Manta-200, deployed through the Nautilus mid-ship moonpool.

The Nautilus is a vessel with one North American MCK-1240 upper forecastle deck STBD side SWL 7.1-ton crane, large accommodation (46 berths) and deck capacity.

The vessel will be outfitted with TDI-Brooks' complete geotechnical tool kit including a suite of innovative geotechnical tools for soil sampling and measurement.

These include 0.5- and 1-meter box corers (BC), 6- and 9-meter piston corers (PC), 20-meter jumbo piston corers (JPC), cyclic t-bar instrument (TBAR), piezocone penetrometers including a 40-meter CPT-Stinger and 10-meter Gravity CPT tool (gCPT), Geomil Manta-200 CPT, Neptune 3K & 5K vibracorers and TDI-Brooks' designed pneumatic vibracorer.

The Nautilus will have a Teledyne RESON full ocean depth multibeam echosounder (MBES) for surveys to approximately 2,500 meters water depth for performing hydrographic marine, surface geochemical "seep-hunting" (SGE) and seabed heatflow surveys (HF).

The Nautilus will be operated within a robust Safety Management System. All of TDI's vessels are regularly vetted by client marine assurance groups and are a part of the OCIMF Offshore Vessel Inspection Database (OVID).

MORE INFO www.tdi-bi.com

INNOVATION

Wind energy tech developers attract major investments

Airborne Wind Energy (AWE) is accelerating toward commercialization as two leading technology developers attract major global investment through crowdfunding initiatives, Airborne Wind Europe (AWE) reported.

The Brussels-based trade body said latest funding rounds from EnerKite and Kitemill have attracted a combined 2 million euros with more than 1,000 investors globally.

Kitemill recently unveiled designs for its first commercial scale KM2 system capable of taking AWE to utility-scale. The technology is set to feature in the 7.5 million euro Norse Airborne Wind Energy Project (NAWEP), backed by the EU Innovation Fund, with a total of 12 KM2 units due for installation.

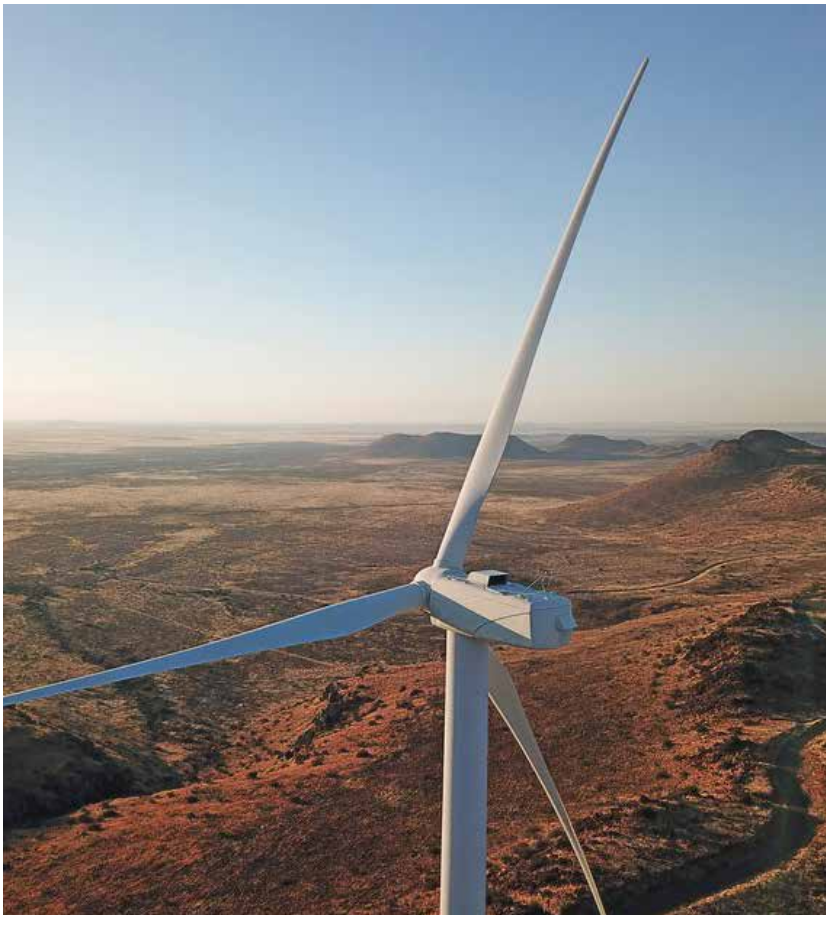
"We are thrilled to see two of our leading AWE technology members attracting large levels of international attention," said Secretary General Kristian Petrick. "AWE is about to become a game-changing solution unlocking large untapped wind resource at high altitudes enabling more energy to be extracted at lower carbon intensity and eventually at lower cost. We are inviting other potential investors to join this journey right now as we aim to help Europe and other areas of the world accelerate net-zero electricity

production and security of supply."

A recent white paper conducted by BVG Associates, on behalf of Airborne Wind Europe, projected the AWE market to reach around $100 billion (92.39 billion euros) by 2035-2040 and several hundreds of billions soon after. Based on the assumption that AWE follows the same trend as the established wind turbine market 40 years ago, BVG further estimates the cumulative global deployment of AWE could reach 5 GW by 2035 and at least 177 GW by 2050.

New and disruptive AWE technology offers unique benefits compared to traditional wind-energy systems. Research indicates that harvestable high-altitude wind power is about 4.5 times stronger than ground level resources. AWE also allows for continuous adjustment of harvesting altitude seeking the best available wind resource. This high-capacity factor ensures a more consistent and stable energy supply alleviating intermittency issues experienced by more established

EGA's "Beat the Heat" program is a summer-long effort across the company. Employees are trained to detect the early signs of heat stress in themselves and others. (Courtesy: Emirates Global Aluminum)



3DPRINTUK is the first 3D printing service bureau in the U.K. to be certified carbon neutral. (Courtesy: 3DPRINTUK)

renewables, and supporting future hybrid energy models.

In addition, AWE substantially reduces material consumption by up to 90 percent. This has a positive impact on overall costs, manufacturing, transport, and logistics operations, as well as the carbon footprint and environmental impact.

Another strong benefit is the versatility of AWE technology. Being scalable from a few kilowatt to several megawatt, the systems are suitable for a broad range of markets including offshore repowering, floating offshore, mountainous and remote locations.

"AWE technology has potential to drive down the levelized costs of wind energy (LCOE), through a decrease in capital costs (CAPEX) due to low material use, combined with increased capacity factor, easier logistics and quick set-up as well as the high-power density per square-kilometre," Petrik said. "The first commercial AWE systems are already competitive in markets with diesel-based power generation, with experts estimating AWE will reach parity with established onshore wind by the mid-2030s," said Petrik.

MORE INFO airbornewindeurope.org

INNOVATION

EGA provides volunteers wearable tech to beat heat

Emirates Global Aluminum, the largest industrial company in the United Arab Emirates outside oil and gas, recently announced the company has expanded the use of Kenzen, a wearable technology platform, to 350 employee volunteers to "Beat the Heat" this summer.

Heat-related illness is a hazard for anyone working outside in the UAE summer, and can be fatal if left untreated. It is, however, preventable. EGA has focused for more than a decade on eliminating heat-related illness in summer.

Kenzen's wearable technology offers the potential to further protect outdoor workers in the UAE, by continuously reporting core body temperature, heart rate, activity, and other body indicators allowing both the wearer and EGA's safety team to detect heat strain in the body before the early signs can be felt.

Despite industrial processes that generate further heat, and which must run and be tended around the clock, EGA achieved zero heat-related illnesses in 2019 and 2022. In 2021, EGA recorded two cases of heat-related illness requiring treatment at the company's on-site medical centers. In both cases, the employees received rehydration via intravenous drips and fully recovered within hours.

"Heat-related illness is a serious threat to health and even life in our region, and increasingly around the world," said Abdulnasser Bin Kalban, EGA CEO. "Our work has shown that heat-related illness is entirely preventable, even in challenging industrial environments like ours. Wearable technology offers the potential to protect people even more, and I am looking forward to the results of the wider trial we are conducting this summer."

EGA's Beat the Heat program is a summer-long effort across the company's operations. Employees are trained to detect the early signs of heat stress in themselves and others. EGA conducts hydration tests before and during shifts, and employees are encouraged to take regular breaks and cooling showers. Cooling booths, drinking stations, icemakers, and portable air-conditioning units in EGA production areas help keep people cool.

"We are delighted to support Emirates Global Aluminum in their mission to prioritize employee health and safety and contribute to cutting-edge research on thermal physiology," said Kyle Hubregtse, Kenzen CEO. "By combining Kenzen's wearable technology with EGA's dedication to workforce well-being, we are setting new benchmarks in heat stress management and advancing the frontiers of occupational health."

MORE INFO www.ega.ae/en

INNOVATION

3DPRINTUK attains carbon neutral status

3DPRINTUK announced early in 2023 its commitment to a sustainable approach to its additive manufacturing (AM) operations and outlined its "Road to Net Zero" plan. The company has announced it has already taken a significant step toward this goal by attaining certified carbon neutral status, the first 3D printing service bureau to do this in the United Kingdom.

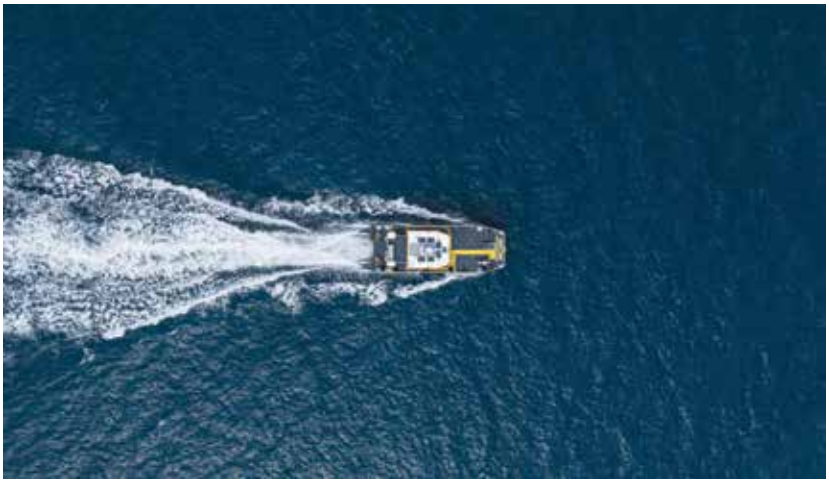
Thanks to its partnership with Climate Partner, 3DPRINTUK has gained a better understanding of its carbon footprint and identified ways to reduce it. The company has also been able to offset the emissions that it can't eliminate through its current carbon reduction program.

Through this collaboration, 3DPRINTUK has been able to offset 448,000 kilograms of CO_2, equally split between two supported projects: improved cookstoves in Uganda and wind energy in De Aar, South Africa. Both projects contribute to the UN Sustainable Development Goals (SDGs) and have been verified by Carbon Check (India) Private and TUV SUD South Asia Private Limited, respectively.

The improved cookstoves Uganda project aims to replace conventional and less efficient cookstoves in the country with improved cookstoves. Three objectives are being pursued: reducing fuel consumption, improving the health of the population in Uganda, and reducing deforestation.

The aim of the wind-energy project in De Aar, South Africa, is to harness the region's wind-energy potential to balance its energy needs in a sustainable way. The share of electricity now supplied by the wind farm would have otherwise been generated by fossil fuels. The wind-power project avoids about 433,920 tons of CO_2 emissions per year. In addition to the environmental benefits, the project assists the local community by creating jobs and improving the access to healthcare.

"We set ourselves some important goals as a leading 3D printing service provider, with the full intent to meet them as soon as practicably possible," said Nick Allen, 3DPRINTUK CEO.



An aerial view of hybrid CTV, HST Ella. (Courtesy: HST Marine)

"Offsetting our carbon footprint and achieving certified carbon neutrality is a really great start, and we are proud of this achievement, but it remains just the start. We push on."

MORE INFO www.3dprint-uk.co.uk/

INNOVATION

Purus Wind's HST Marine uses Reygar tech for CTV support

Swansea-based HST Marine, a Purus Wind company, is leveraging Reygar's BareFLEET technology to understand and report on the performance of its hybrid Crew Transfer Vessels (CTVs).

HST Marine's commitment to provide low-carbon vessel solutions to the clean-energy industry aligns with the international offshore wind sector's aims to reduce vessel emissions and fuel burn, thereby driving down the overall carbon footprint of building and operating offshore wind farms.

The company has four hybrid CTVs in operation with three more soon to enter service, all of which have BareFLEET installed. These vessels are a mix of both controllable and fixed pitch propeller systems that take power from either a high-efficiency electric motor or the main engine, allowing them to operate near silently and with zero emissions in electric only mode.

"We recognize the value of gathering and sharing accurate performance data from our vessels," said Christopher Monan, HST Marine COO. "It supports the company in winning new contracts and enables us to build lasting customer relationships. We have seen reductions in main engine operation of around 50 percent on our hybrid vessels, which has the holistic benefits of lowering fuel consumption, emissions, and noise when in harbor, as well as lengthening service intervals. Being able to demonstrate these efficiency gains with clear and concise performance data is of utmost importance to nurture trust with both new and existing charterer clients, whilst also providing them with essential evidence for their own environmental reporting." New features developed by Reygar within the BareFLEET technology package allow HST Marine to monitor the performance of hybrid. BareFLEET also monitors the electrical power consumption of the hybrid drive, with specific usage and performance statistics included alongside conventional diesel engine performance data. These features enable HST Marine to evaluate the environmental performance of hybrid CTVs against conventional vessels and to make adjustments for further improvement.

Firetrace fire suppression systems detects and suppresses fires in high-risk equipment, such as CNC machines, vehicles, heavy equipment, electrical cabinets, and wind turbines. (Courtesy: Firetrace)

"The transition to hybrid CTVs is an important step towards zero emission targets for the industry as a whole and we have recently delivered a number of BareFLEET systems for new hybrid vessels," said Chris Huxley-Reynard, Reygar's managing director. "It is hugely satisfying to see the technology performing well for HST Marine, providing their teams with the data they need both onboard and onshore."

MORE INFO hst-marine.com

MAINTENANCE

Emerging wind markets double down on fire protection

The demand for fire suppression to be installed in renewable energy infrastructure is growing in emerging markets where the energy transition is picking up the pace. By contrast, 75 percent of project owners and operators in mature markets, such as the U.S., don't seek out fire protection op-

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tions until they experience a fire event, according to Firetrace International, a leading supplier of fire suppression technology to the global renewable industry.

With markets such as Latin America and the Caribbean anticipating 460 percent growth in large-scale solar and wind power capacity by 2030, and the Indian market having grown by 250 percent between 2014 and 2021, the accompanying appetite to protect new assets with solutions for risks, like fire, is growing in parallel.

The proactive approach to fire risk management in emerging markets is unlike the approach typically taken in mature markets, where investing to protect against fire risk in advance of an event is still relatively uncommon.

Since 2015, weather-related losses have tripled in the U.S., according to data from GCube Insurance's "Hail or Highwater" report, and wildfires have posed the most consistent, year-round threat of damage to assets. Average asset downtime for a wind turbine after a catastrophic event in the U.S. is also 12 to 18 months, at a cost of $2,000/day in revenue.

And U.S. plans to push renewables farther offshore and farther into rural areas bring project risks into closer alignment with those in emerging markets due to the remoteness of these sites.

"We have noticed that owners and operators of renewable assets in emerging markets are more likely to take precautions to protect their investments than those in the markets we have traditionally served, and there is good reason for this," said Joe DeBellis, Senior Global Sales Manager at Firetrace.

"However, this proactive attitude toward managing risk and ensuring that infrastructure sees out its expected operational lifetime should be universal rather than a trend in nascent renewable energy markets. The reality is that more mature markets are increasingly being exposed to extreme weather and are seeking out more remote locations for the deployment of renewable assets.

In this way, their risk profiles more closely resemble risk profiles in emerging markets, and they would benefit from adopting similar strategies to safeguard their projects."

MORE INFO www.firetrace.com

MAINTENANCE

Global Wind Service appoints new HR chief

Global Wind Service (GWS), a provider of turbine installation and service, recently appointed Jens Bolvig as the company's new Chief Human Resources Officer (CHRO).

Bolvig brings experience from the oil and gas industry, with experience working with a global workforce. His expertise will play a crucial role in driving Global Wind Service's commitment to excellence in employee management and ensuring a skilled and motivated workforce.

"I'm really excited to be joining Global Wind Service and becoming a part of the wind industry," Bolvig said. "In such a dynamic and rapidly growing field like wind, it's crucial to have a good grasp of all aspects of GWS and to truly understand our technicians. That's when HR and the work we do in this area become incredibly relevant for the entire company and our business. We're all about building a skilled and motivated workforce, and I can't wait to contribute to that."

"It is a great pleasure to welcome Jens to our executive team as our new CHRO," said Michael H j Olsen, CEO of Global Wind Service. "I am confident that Jens' extensive experience will be a great benefit for us and that his skills and leadership will further enhance our ability to attract and retain top talent, optimize our workforce, and maintain our commitment to safety, quality, and excellence."

Global Wind Service (GWS) is a provider of turbine installation and service solutions for onshore and offshore wind projects dedicated to delivering sustainable and reliable wind turbine solutions that enable the transition to a cleaner and greener energy future.

MORE INFO globalwindservice.com

MANUFACTURING

U.S. offshore wind market report notes milestones

The U.S. offshore wind industry and supply chain reached major milestones in the second quarter of 2023 as installation began on the nation's first two commercial-scale projects using components sourced from U.S. manufacturing facilities. These achievements are the result of a growing supply chain that has seen historic levels of investment in the last few years, including passage of the federal Inflation Reduction Act (IRA).

These and other findings are detailed in the Business Network for Offshore Wind's U.S. Offshore Wind Quarterly Market Report, which documents key investments announced over the past three months, growth in state demand for offshore wind, and notable policy advancements that drove the U.S. market forward between April and June 2023.

The network has also released a complementary Mid-Year Supply Chain Snapshot that highlights the accelerated growth experienced in just the past few years. While the U.S. market achieved a major milestone with the start of installation on the Vineyard Wind and South Fork Wind offshore projects, the Mid-Year Supply Chain Snapshot further profiles the development of the immense supply chain that is supporting the emerging industry. State demand has driven the market forward for years, but actions by the Biden-Harris administration to bring certainty to the permitting process and make historic investments in infrastructure and clean energy development have greatly accelerated supply chain growth.

SAVE THE DATE

BUSINESS NETWORK FOR OFFSHORE WIND

IPF 24

2024 INTERNATIONAL OFFSHORE WIND PARTNERING FORUM

April 22-25, 2024 | New Orleans

The International Partnering Forum (IPF) is the premier offshore wind energy conference in the Americas.

Hosted by the Business Network for Offshore Wind, IPF connects global leaders and businesses in the supply chain, offers unparalleled networking opportunities, and delivers the most timely and relevant updates on the industry. With the rapid expansion of offshore wind on a global scale, IPF attendance helps secure your place as a leader in the industry.

Located in the heart of America's offshore energy industry, New Orleans will host 2024 IPF just as the Gulf of Mexico begins developing its offshore wind market. Gulf companies are already hard at work building America's next energy industry and moving to integrate new technologies like green hydrogen into offshore wind. Embracing its offshore energy past and embracing the future of offshore wind, New Orleans and the state of Louisiana are emerging as a center of experience, expertise, innovation, and heart of this new industry.

Registration opens October 30

LEARN MORE

BUSINESS NETWORK for OFFSHORE WIND

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Snapshot details include:

- A 272 percent increase in the number of U.S. market supplier contracts since 2021, according to the Network's Market Dashboard, with 47 percent of that growth occurring since the IRA was signed in August 2022.
- 90 percent of contracts in the U.S. market going to companies that are either headquartered or have a presence in the U.S.
- A 169 percent increase in companies that have registered in the Network's free offshore wind supply chain database since 2021, with a 54 percent increase since the IRA was signed.
- $16.6 billion in new market investments made since 2021 — more than quadruple the amount invested previously — with $7.7 billion of those investments made after the IRA was signed.
- A 100 percent increase in the number of vessels under construction or being retrofit in U.S. shipyards since 2021.

"We are proud to say that we have steel in the water, steel in our factories, and steel in our shipyards today," said Liz Burdock, founder and CEO of the Business Network for Offshore Wind. "Thanks to supportive federal and state policies, we are seeing unprecedented growth in the U.S. offshore wind supply chain across the nation. New contracts are signed daily with a vast majority going to small- and medium-sized American companies creating thousands of new jobs. With $7.7 billion in new U.S. offshore wind investments since the Inflation Reduction Act was signed into law, this is just the beginning.

We will see many more factory openings, port revitalizations, and vessels under construction in the years to come."

The historic commencement of the Vineyard Wind and South Fork Wind projects also yielded additional U.S. supply chain milestones. The two wind farms will feature the first U.S.-manufactured offshore substation, built in Texas, the first U.S.-manufactured export cables, from South Carolina, and the first run of critical steel foundation and tower components in Rhode Island. Unconnected to these projects, the U.S. supply chain also celebrated the first U.S.-assembled monopile foundation in Paulsboro, New Jersey.

The Network's U.S. Offshore Wind Quarterly Market Report, which includes new data and analysis on market trends and advancements, provides additional context to the quickly developing market and its supply chain. The report details include:

- The many recent firsts for the U.S. supply chain, including the first U.S.-built offshore wind substation and monopiles, along with the first cables manufactured for a U.S. commercial-scale project.
- New investments in steel manufacturing facilities in Ohio and Baltimore and a California port's ambitious $4.7 billion plan for a major floating offshore wind facility.
- Economic headwinds that have forced projects in Massachusetts and New York to adjust their state financial agreements and led to new legislation passed in New Jersey aimed at supporting one of its projects.
- New offshore wind markets — adding to the existing 84 GW demand — in Delaware, Illinois, and Maine, which have all considered or advanced new procurement legislation, and Louisiana, which is negotiating with developers to advance projects in state waters.

MORE INFO www.offshorewindus.org/quarterly-report

Vestas received an order for 45 V150-4.2 MW wind turbines. (Courtesy: Vestas)

MANUFACTURING

Vestas gets 189-MW order for U.S. wind project

Vestas has received a 189 MW order to power an undisclosed wind project in the U.S. The order consists of 45 V150-4.2 MW wind turbines.

The order includes supply, delivery, and commissioning of the turbines, as well as a multi-year Active Output Management 5000 (AOM 5000) service agreement, designed to ensure optimized performance of the asset.

Turbine delivery is expected to begin in the first quarter of 2024 with commissioning scheduled for the second quarter of 2024. The customer and project are undisclosed.

MORE INFO www.vestas.com/en