Siemens Gamesa offshore project. (Courtesy: Siemens Gamesa)

CONSTRUCTION

Siemens Gamesa to supply 448 MW to Scottish project

Siemens Gamesa Renewable Energy (SGRE) recently announced the firm order to supply wind turbines for the 448 MW Neart na Gaoithe (NnG) offshore wind power project being developed by EDF Renewables in Scotland. The contract further cements SGRE's market-leading position.

The company will install 54 of its SG 8.0-167 DD offshore turbines, with a 167-meter rotor diameter and 208-meter tip height. The installation of the unique Direct Drive technology turbines at Neart na Gaoithe will take the figure of DD offshore turbines comfortably beyond 2,000 turbines that SGRE has sold worldwide. The offshore wind-power plant is expected to be operational by 2023.

Neart na Gaoithe wind project, which means "Strength of the Wind," continues a partnership with EDF Renewables that began with the Round 1 development of Teesside wind park in 2011. The 448-MW offshore wind power plant is 20 kilometers from the east coast of Scotland and close to the Port of Dundee where pre-assembly work will take place. This project will use 81 meter-long B81 blades produced on the re-modeled production lines of the SGRE factory in Hull.

The market-leading Direct Drive turbines provide additional capacity through fewer turbines, compared with the original consent given for the project for 75 turbines. When fully operational, it will generate electricity for about 375,000 homes, or all of the domestic properties in a city the size of Edinburgh, and displace 400,000 metric tons of CO_2 annually.

"Receiving the firm order for the Neart na Gaoithe project from EDF Renewables U.K. is excellent news for Siemens Gamesa," said Andreas Nauen, CEO of the Offshore Business Unit of Siemens Gamesa Renewable Energy. "We're fully prepared to deliver our reliable SGRE offshore Direct Drive technology and to doing our part to deliver clean energy to approximately 375,000 Scottish households when the project is in operation."

The order comes in a year that saw the U.K. register a three-month period where renewable energy was the leading source of energy, outstripping fossil fuels for the first time. Additionally, more than half of Scotland's energy consumption in 2019 was provided by renewable energy, while record-low

prices were also recorded for clean energy, falling to just 39.50 pounds per MW/h.

MORE INFO www.siemensgamesa.com

CONSTRUCTION

Fred. Olsen Windcarrier awarded installation contract

Fred. Olsen Windcarrier has been awarded a contract by EDF renewables (EDF) for the transport and installation of 54 SG 8.0-167 DD wind turbines for the Neart na Goithe (NnG) offshore wind farm 15.5 kilometers off the Fife coast, east of Scotland. Fred. Olsen Windcarrier will mobilize one of its vessels for the project, which starts in the spring of 2022.

Fred. Olsen Windcarrier's Blue Tern is in the foreground, and Brave Tern is in the background. (Courtesy: Fred. Olsen Windcarrier and Mineev Aleksandr)

EDF is a large French utility and a leading player within offshore wind with the mission to deliver renewable solutions to lead the transition to a sustainable energy future. This project demonstrates EDF Group's strong ambition in being a leading global player in the offshore wind industry. EDF acquired NnG in 2018.

"This is our first direct contract with EDF, and we are extremely pleased with this major contract award," said

Guillaume Bonnesoeur, Commercial Manager at Fred. Olsen Windcarrier. "We look very much forward to partnering up with EDF by sharing the challenges and shouldering the responsibilities. The turbines to be installed will be supplied by Siemens Gamesa Renewable Energy (SGRE) — our reliable partner in many previous projects. This contract with EDF cements our leading position in the offshore wind-turbine installation industry, and we look forward to working with them to safely deliver on this project."

"We are excited to get work under way with our contractors and all Scottish companies and stakeholders participating in the project," said Matthieu Hue, CEO at EDF Renewables. "The 450-MW NnG project will play an important role in de-carbonizing the U.K. electricity system and is a further example of EDF Renewables' continuous investment and growth in Scotland."

NnG will consist of 54 SG 8.0-167 DD wind turbines with the potential to generate 450 MW of renewable energy. Installation will be in Scotland on a site with large water depths. When fully operational, it will generate enough electricity to power over 375,000 households. Load-out port is Dundee in the U.K.

MORE INFO www.windcarrier.com

CONSTRUCTION

Partnership adds 750 MW to Wyoming's wind-energy portfolio

Mortenson has been selected by valued partner Rocky Mountain Power, an operating entity of PacifiCorp (a subsidiary of Berkshire Hathaway Energy), to construct the TB Flats I & II Wind Energy Project and the Ekola Flats Wind Energy Project in Medicine Bow, Wyoming. The two projects are 20 miles apart and will have a combined wind energy capacity of 750 MW.

The buoy-ready Windcube's new design will provide all of the innovation embodied in the Windcube but features a more robust casing in order to withstand difficult marine conditions in a moving platform at sea. (Courtesy: Vaisala/©Jacques Vapillon-AKROCEAN GEPS Techno)

"TB Flats I & II and Ekola Flats are key to PacifiCorp's Energy Vision 2020 initiative of adding 1,150 MW of wind energy by the end of 2020," said Tim Maag, vice president and general manager of Mortenson's Wind Energy team. "We are very excited to be working with Rocky Mountain Power to significantly increase the state's wind energy output, as Wyoming has the potential to become one the nation's strongest wind energy producers."

TB Flats I & II spans 44 square miles and will contain 132 Vestas turbines totaling 500 MW. Ekola Flats spans 29 square miles and will contain 10 GE and 53 Vestas turbines totaling 250 MW. Erection at TB Flats I & II is scheduled to begin in April of 2020, and Ekola Flats will start in June 2020. Both projects are scheduled to complete in October of 2020. Currently, foundations are being placed at both projects.

Mortenson's scope of work for both projects includes access roads, foundations, collection, substation, transmission lines, tower wiring and erection of turbines. Mortenson will self-perform all foundation, collection, turbine erection and substation construction. At peak construction, 200-250 people will be employed at each site.

Wyoming's first wind energy was generated in 1982 by two wind turbines in Medicine Bow installed by NASA and the US-DOE. At the time, the wind turbines installed were the largest in the U.S., had two blades each, and generated a combined 6.5 MW of wind energy. Currently, the state of Wyoming has an installed wind capacity of 1,488 MW with 3,753 MW under construction.

Upon completion, TB Flats I & II and Ekola will increase Wyoming's wind-energy portfolio by 150 percent. Mortenson looks forward to helping Rocky Mountain Power increase Wyoming's wind energy production.

MORE INFO www.mortenson.com

INNOVATION

Leosphere enhances offshore offerings with Windcube

Leosphere, a Vaisala company that specializes in developing, manufacturing, and servicing turnkey wind Lidar (light detection and ranging) instruments for wind energy, aviation, meteorology, and air quality, recently announced the fortification of its suite of offshore solutions to include the incorporation of a buoy-ready Windcube system to enable enhanced offshore wind resource assessment, even in harsh offshore environments.

"The Windcube is the reference Lidar for all phases of wind development and operations internationally," said Alexandre Sauvage, CEO of Leosphere,

a Vaisala company. "Already widely deployed across applications onshore, near-offshore and on platforms in the ocean, our new design enables customers to quickly leverage Windcube in an offshore floating environment."

This buoy-ready offshore-environment solution retains all of the sought-after capabilities of the industry-leading Windcube system, which is used today onshore and offshore on fixed platforms. It provides bankable data by producing constant accuracy up to 200-plus meters over 12 simultaneous heights and is accepted onshore and offshore by all international standards and guidelines.

The new design will provide all of the innovation embodied in the Windcube but features a more robust casing in order to withstand difficult marine conditions in a moving platform at sea. It is also designed to be easily integrated into commercial floating buoys. Compared to traditional meteorological masts, floating Lidar systems offer many benefits, including quicker deployment and cheaper installation in which savings up to 90 percent are possible.

With the global demand for energy constantly growing, accelerating at its fastest pace in more than a decade, offshore wind and other carbon-free solutions are becoming a more important part of the world energy demand equation. According to a recent study by Global Industry Analysis, offshore wind capacity is forecast to grow by more than 80 GW through 2024, achieving an impressive compound annual growth rate (CAGR) of more than 25 percent in that period.

"The ability to measure wind speeds and direction from a floating Lidar solution instead of a met mast has been essential to accelerating the pace of offshore development," said PS Reilly, CEO of AXYS Technologies, a global provider of data monitoring solutions and turnkey offshore monitoring campaigns. "The Windcube and its ability to accurately read wind characteristics has been a part of this industry breakthrough from the beginning, and the enhancements with this new model will help us bring even more reliability and bankability to our clients."

MORE INFO www.leosphere.com

INNOVATION

TÜV NORD completes prototype certification for offshore turbine

On behalf of Siemens Gamesa Renewable Energy (SGRE), TÜV NORD has certified the prototype of one of the world's largest offshore wind turbines. The first milestone in certification process was thus reached for the SG 10.0-193 DD. The new 10 MW turbines are expected to be ready for the market in 2022.

"We are very pleased to support our partner Siemens Gamesa Renewable Energy by completing this important step towards type certification of this new generation offshore wind turbine," said Silvio Konrad, member of the Management Board of Industry Service at TÜV NORD and responsible for the strategic business area Energy.

TÜV NORD successfully evaluated the design of the prototype according to the IECRE scheme and corresponding Operational Documents (ODs). Furthermore, a prototype certificate was prepared according to the Danish "Executive Order on a technical certification scheme for wind turbines" (BEK73). The prototype is supposed to be installed at the Wind Test Center Østerild (Denmark) in the upcoming months.

Tests and measurements including load validation, safety, and functional tests as well as power performance measurements will be carried out on the prototype. Based on the obtained results, TÜV NORD will verify characteristics of the wind turbine as assumed in the design evaluation.

Toward the final type certification, TÜV NORD also performs the manufacturing evaluation of the main components as well as the nacelle and hub assembly. Compliance with the design requirements and SGRE specifications at the production will be assured, confirming turbine's readiness for high-quality series production.

With a diameter of 193 meters and a capacity of 10 MW, the SG 10.0-193 DD is one of the world's largest offshore wind turbines. Thanks to the larger rotor blades, which almost correspond to the dimensions of a football field, the turbine produces 30 percent more energy annually than its 8-MW predecessor. The turbine can thus supply about 10,000 average European households with electricity per year.

MORE INFO www.tuv-nord-group.com

INNOVATION

Green energy gets a boost with Clemson University project

Flooding at high tide has made Charleston one of the first South Carolina cities to directly feel the pain of climate change, so it's fitting that a new green-energy research project is launching in the midst of the most vulnerable areas.

Clemson University researchers based in North Charleston recently received $1.24 million from the U.S. Department of Energy to develop a new way to test a key piece of equipment on offshore wind turbines. The goal is to enhance their reliability, making them more cost-effective and attractive to build.

More wind power would make the world less reliant on fossil fuels that have been linked to climate change and sea-level rise. The rising water has contributed to more frequent flooding during high tide in Charleston and other coastal cities.

A team of researchers is doing its part to temper the effects of climate change in the Dominion Energy Innovation Center, a $110-million Clemson facility that opened six years ago at the former naval base in North Charleston.

The test bed at the wind-turbine drivetrain testing facility. (Courtesy: Clemson)

J. Curtiss Fox, the director of research facilities at the center, said it's crucial to make offshore wind turbines as reliable as possible. They are located in windy, blustery environments, often far from land and difficult enough to reach that many come equipped with helicopter landing pads.

"To go out there and change a $5 part becomes a very expensive endeavor," said Fox, the principal investigator on the grant funding the new research. "There's very little margin for error or your operating costs go up dramatically."

The new research project could provide a boost to a clean-energy source that already has some significant momentum. The global offshore wind market benefited from rapid technology improvements and grew nearly 30 percent per year between 2010 and 2018, according to a new report from the International Energy Agency.

MORE INFO newsstand.clemson.edu

INNOVATION

Aquarius Marine Coatings launches anti-foul solution

Aquarius Marine Coatings Ltd. (AMC) recently announced the launch of its award-winning anti-foul coating, Coppercoat-Commercial, in the offshore energy sector. The coating, which contains exceptionally high levels of copper, a natural anti-microbial agent, protects sub-sea infrastructure from hosting layers of plant, animal, and microbe growth while meeting environmental and safety standards. It ensures that underwater infrastructure continues to meet expected performance levels, while lowering maintenance costs and reducing the potential for planned and unplanned outages.

The launch follows the completion of a five-year trial funded by EDF Energy and undertaken by Plymouth Marine Labs (PML) in the U.K., which concluded that Coppercoat-Commercial is the best protective anti-foul solution for underwater turbines. Although the trial was carried out with a view to support wave and hydropower facilities, the same coating can be applied equally to any static or dynamic subsea structure to enhance the longevity and efficiency of both fixed and floating wind farms, particularly in areas of significant marine flow.

Further research conducted by Dr. Tom Vance at PML looked at loss of paint thickness over time and showed that Coppercoat-Commercial was also the most effective anti-foul in terms of longevity, losing just 4.3 percent over the five-year trial period.

"We developed Coppercoat for the marine industry 30 years ago," says Jayson Kenny of AMC. "Since then, we have perfected our products and gained plenty of first-hand experience of what happens to vessel's hulls and sub-sea equipment when left unprotected. Bio-fouling on sub-sea structures can cause all manner of problems, from accelerated aging, increases in weight, drag, and operating temperatures, through to the erosion of metalwork. Ever more commonly we are encountering reports of microbial induced corrosion (MIC), a problem to which Coppercoat-Commercial provides a reliable long-term solution."

The launch of Coppercoat-Commercial for the offshore energy sector comes at a key moment in the development of renewable offshore energy, as operators look to exploit opportunities in deeper waters where lifting, cleaning, and replacing subsea assets becomes significantly more difficult. Equally important, Coppercoat-Commercial is seen as a key component in extending the lifespan of the infrastructure necessary to support wave or hydropower and so can contribute toward making it a viable part of the energy mix.

AMC's experience in the marine sector has demonstrated that Coppercoat-Commercial can last for 20 to 30 years depending on usage and conditions. The hard-wearing, densely copper-filled resin is suitable for both cold

The launch follows the completion of a five-year trial funded by EDF Energy and undertaken by Plymouth Marine Labs (PML) in the U.K., which concluded that Coppercoat-Commercial is the best protective anti-foul solution for the underwater turbines. (Courtesy: Aspectus Group)

and tropical waters and can be applied by roller or spray and can be used on all surfaces including steel, concrete, aluminum, GRP, and various polymers. As it is both water-based and free from volatile organic compounds (VOCs), Coppercoat-Commercial is also the most environmentally safe bio-active anti-foul product on the market.

MORE INFO www.aspectusgroup.com

MAINTENANCE

O&M Summit includes solutions-focused program

The Canadian Wind Energy Association will host its 2020 Operations and Maintenance (O&M) Summit in Toronto, Ontario, January 29-30. Now in its sixth year, the O&M Summit program addresses both the global and regional issues facing a mature industry that seeks in-depth expertise and actionable solutions. The O&M Summit is the largest annual wind operations event in Canada and gathers more than 250 wind energy professionals from across Canada and the United States.

The two-day event will offer a comprehensive series of sessions that include cutting-edge, technological insights and interactive, knowledge-sharing discussions. The solutions-focused opening plenary will set the stage for the event and dig into the details right away. Attendees will hear from industry professionals at the forefront of the O&M sector. Reflecting on the past 12 months, the speakers will reveal the specific solutions they developed or advanced, the challenges they maneuvered through, and the most important file on their desk right now.

Day two will open with Behind the Scenes of Canadian Wind Energy Innovation — a plenary of handpicked innovators, who will provide insight into the reality of developing new wind-energy solutions in Canada. This session will reflect on recent, specific solutions and then panelists will turn their gaze to the technology and techniques on the horizon. Concurrent sessions and discussion streams will focus on cyber security, end of financed life, multiple technologies, advanced inspections, and other pressing topics.

Health and safety continue to underpin all aspects of the operations and maintenance sector, and this will be clearly reflected at the O&M Summit, with its incorporation into every session and discussion. This year will see a new special session, Health and Safety Spotlight, where representatives from two companies will discuss their individual pathways — and roadblocks — toward robust health and safety programs. Also, one of the most engaging and rewarding sessions is back by popular demand: the Elevator Pitches session, which will have five speakers pitch a product or service in just five minutes each and receive valuable feedback from the audience.

The O&M Summit is also the place to recognize excellence in Canada's wind-energy industry. Two prestigious awards will be presented at the O&M Awards Breakfast: the O&M Outstanding Achievement Award and the Health and Safety Excellence Award. Last year, TECHÉOL and Vestas were honored with the CanWEA awards, respectively.

The O&M Summit's hustling and bustling exhibition space will provide attendees the opportunity to learn about the latest technologies, innovations and services, and to connect with wind-energy professionals and decision makers from across the industry. With booths in and around the plenary room, attendees and exhibitors will benefit from easy access to deepen existing connections with their sector colleagues as well as to establish new connections for the future.

MORE INFO canwea.ca/events/canwea-operations-and-maintenance-summit-2020

MAINTENANCE

Evacuator emergency descent system wins offshore wind award

Global safety specialist Survitec recently took home a prestigious East of England Energy Group (EEEGR) Award during a gala End of Year Celebration and Awards Dinner held at the U.K.'s historic Dunston Hall.

Safety and survival solutions specialists, Survitec, won the EEEGR Award in the Offshore Wind category

for the Evacuator system — an emergency wind-turbine descent system that the judging panel recognized as representing "a significant contribution" to renewable energy safety.

"We're very pleased to award Survitec and Evacuator Worldwide the EEEGR Offshore Wind award for the pioneering Evacuator Emergency Descent System," said Simon Gray, EEEGR CEO. "Their collaborative effort demonstrates their commitment to increase the safety of those working within the offshore energy sector and it's great to have both companies with us as EEEGR members."

"We are absolutely delighted to win this prestigious award, which we accept on behalf of Evacuator's inventors Eugene Verstegen and Joris Veeger, from the Netherlands," said Baba Devani, Survitec Marine CEO.

"With the U.K. set to more than double its total offshore wind power capacity by 2030, the safety of those installing, maintaining and servicing offshore wind turbines is crucial," said Baba Devani, Survitec Marine CEO. "This award recognizes Evacuator's capacity to keep offshore wind farm workers safe."

"Winning this award so soon after Evacuator's market introduction illustrates perfectly the reason behind the decision to partner with Survitec, not only in the U.K. but on a global basis," said Verstegen, co-owner of Evacuator Worldwide. "Survitec has proven to be the right choice in ensuring that all those working in high-rise marine structures have access to the most optimum means of escape possible."

"The Evacuator is the world's most intuitive and only fire-proof, rapid collective evacuation/descent system," Devani said. "The system, which is fully mechanical, does not require electrical power to operate — which guarantees its operational reliability, whatever the circumstances. Survitec launched this to the offshore energy sector in April this year, and it's great to see that it is quickly becoming recognized as the evacuation system of choice for wind turbine operators."

"During an emergency every second counts," Verstegen said. "With wind turbine's towering over 160 meters, the safety of personnel is of paramount importance. Having a simple and fire-proof system capable of evacuating personnel rapidly, simply and safely can mean the difference between life or death."

The Evacuator E165 is designed for wind turbines up to 165 meters and is a fully mechanical evacuation system based on steel cables. (Courtesy: Survitec Group)

Emergency evacuation from offshore wind turbines has usually been by way of rope-based rescue-kits. This slower method is not fire-proof and requires professional abseiling skills. The Evacuator system provides a safer and faster descent, increasing survivability of those that need to escape from heights in an emergency.

Fire-proofed up to 1,750°C for 30 minutes, the two-reel Evacuator E165, especially designed for wind turbines up to 165 meters, is a fully mechanical evacuation system based on steel cables. This provides a fully automatic emergency descent at a controlled descent-speed of one meter per second — just "click on and go."

Capable of evacuating multiple personnel working at heights up to 300 meters to safety, personnel can click on each reel at the same time, providing their combined weight does not exceed 282 kilograms per reel. During evacuation, two reels can be used at the same time. With a lifespan of more than 30 years, it is easily installed, maintained, and comes with accompanying personal protective equipment in an "Evacuation Chest."

The EEEGR Awards, now in their 17th year, celebrate the outstanding achievements and developments that have taken place within the energy sector over the last 12 months.

MORE INFO www.survitecgroup.com

MAINTENANCE

3M product training for wind-energy customers in January

In January 2020, WINDSOURCING.COM GmbH will again offer free product training for customers from the service market of the wind industry together with its supply partner 3M Deutschland GmbH. The product training is January 24, 2020, at the 3M Fall Protection Training Center in Hamburg and is aimed at all service companies involved in the maintenance and repair of wind turbines and rotor blades.

The training consists of three different modules:

After the successful application training in February 2019, customers again have the opportunity to get to know the new 3M™ Erosion Protection Tape 2.0 W8750/W8780. The participants will learn the correct application practically on a blade model and receive a certificate of participation as proof of training, which is partly also required by the OEM.

The SG 11.0-193 DD Flex offshore wind turbine features a 193-meter diameter rotor using the 94-meter long Siemens Gamesa B94 Integral Blades. (Courtesy: Siemens Gamesa)

In the second training module, 3M™ presents the Acrylic Foam Tape, which can be used for the attachment of aerodynamic parts such as vortex generators.

In the last module, participants get to know the 3M™ Peltor communication headset and learn where it can be used in wind energy.

The organizers expect service companies from all over Europe to participate in the training and therefore point out that the training will be offered in German and English.

MORE INFO www.windsourcing.com/en/trainings/3m-product-training-2020

MANUFACTURING

Siemens DD Flex increases capacity on large offshore turbine

Offshore wind industry leader Siemens Gamesa Renewable Energy (SGRE) recently expanded its product portfolio at the WindEurope Offshore 2019 Conference & Exhibition with the launch of the new Siemens Gamesa DD Flex concept and the SG 11.0-193 DD Flex offshore wind turbine. Built on the current largest offshore wind turbine in the SGRE fleet, the SG 11.0-193 DD Flex can reach a capacity of 11 MW under specific site conditions.

"The SG 11.0-193 DD Flex is another example of how Siemens Gamesa constantly works to improve performance and provide greater value for our customers, ratepayers, and society-at-large," said Andreas Nauen, CEO of the Siemens Gamesa Offshore Business Unit. "Digitalization allows us to increase the capacity of our current largest machine to 11 MW, boosting its annual energy production, while keeping the Levelized Cost of Energy (LCOE) down. In turn, our customers can deliver more clean, reliable energy to end-users at lower overall prices."

The SG 11.0-193 DD Flex offshore wind turbine features a 193-meter diameter rotor using the 94-meter long Siemens Gamesa B94 Integral Blades. Constant digital observations are processed by the control system, increasing capacity up to 11 MW. The upgraded turbine has been created based on SGRE's deep understanding and expertise within its proven offshore direct drive technology, gained over all five product generations since being launched in 2011.

SGRE will also soon install offshore turbine number 1,000 using its patented Direct Drive technology. These turbines are installed in all major markets globally, including the U.K., Germany, Denmark, The Netherlands, Belgium, Taiwan, and more. Furthermore, confirmed orders for an additional 1,000 SGRE Offshore Direct Drive turbines have been received, with installations planned for the markets mentioned above and new offshore markets including the U.S., France, and Japan.

MORE INFO www.siemensgamesa.com

MANUFACTURING

Vestas wins multiple orders in United States

Vestas has received an order for 183 MW of V120-2.2 MW turbines for a wind project in the U.S. with a number of turbines operating in 2.0 MW. Including previously purchased 2-MW platform components, the project has a total nameplate capacity of 202 MW.

The order includes supply and commissioning of the turbines as well as a 10-year service agreement, designed to ensure optimized performance for the lifetime of the project. Turbine delivery will begin in the second quarter of 2020 with commissioning scheduled for the fourth quarter of 2020.

The project and customer are undisclosed.

Vestas also has received an order for 149 MW of turbines, consisting of 12 V110-2.0 MW turbines and 57 V120-2.2 MW turbines for a wind project in the U.S.

The order includes supply and commissioning of the turbines as well as a multi-year service agreement, designed to ensure optimized performance for the lifetime of the project. Turbine delivery will begin in the second quarter of 2020 with commissioning scheduled for the fourth quarter of 2020.

The project and customer are undisclosed.

MORE INFO www.vestas.com