Gearbox Express is North America's largest independent remanufacturer of gearbox assemblies and main shafts for the wind-turbine industry. (Courtesy: Gearbox Express)

MAINTENANCE

Gearbox Express partners with Invenergy Services

Gearbox Express (GBX), North America's largest independent remanufacturer of gearbox assemblies and main shafts for the wind-turbine industry, recently announced a partnership with Invenergy Services, an award-winning sustainable energy solutions provider.

Through the partnership, GBX has secured Invenergy Services to perform major component and field service work, resulting in the combined and expanded geographic footprint of service coverage. GBX and Invenergy Services will now be able to provide a superior product at a lower cost to more asset owners.

"Invenergy's award-winning services platform and desire to perform repairs and replacements in house aligns incentives where we can both focus on our core competencies," said Gearbox Express CEO Bruce Neumiller. "We believe that Invenergy Services' capabilities, combined with our equipment and industry expertise, make for a winning combination."

"Invenergy Services is excited to expand our services capabilities with this agreement, which not only deepens our relationship with Gearbox Express, but also enhances our ability to meet our customers' wind-turbine drivetrain needs," said Brad Purtell, director of Invenergy Services Business Development. "Ultimately, this agreement means delivering cost reductions for our customers due to the scale of the fleet that both Invenergy and Gearbox Express serve."

MORE INFO InvenergyServices.com

MAINTENANCE

Iberwind partners with ONYX InSight to upgrade V90 fleet

Iberwind and ONYX InSight recently announced hardware and software upgrades to Iberwind's Vestas V90 3-MW fleet to power predictive maintenance practices and boost profitability of the

fleet. Turbine upgrades will include the installation of ONYX InSight's ecoCMS hardware, which monitors the condition of a turbine's drive train and its cloud-based fleetMONITOR™ software, which maps turbine health and provides early failure detection across all assets.

Iberwind has installed 323 wind turbines under management in Portugal, with capacity of 730 MW, which equates to about 15 percent of wind energy in the country. As Iberwind aims to reduce the costs of operating and maintaining these turbines, it has looked to leading predictive maintenance technologies to bring efficiencies to the process. Supported by a program of training and technology transfer from ONYX InSight, Iberwind will build its in-house capacity to monitor the condition of its wind turbines, achieving a balanced management of their health through early failure detection.

As owners and operators look to better manage the operational costs of producing energy and to pass savings onto customers and investors, improved oversight and understanding of operations and maintenance will be essential. The technologies that underpin predictive maintenance, including hardware, software, and machine learning algorithms will be essential for achieving this.

"Iberwind consistently outperforms for availability and is a forward-thinking adopter of technology for managing assets and driving down the cost of operations and maintenance," said Ashley Crowther, Global Vice-President, ONYX InSight. "Adopting the right technologies that will enable them to operate in an increasingly digital world will allow Iberwind to better manage operational budgets and improve turbine performance."

"We are constantly searching for ways to optimize the control of wind farms, and now we are taking predictive maintenance to the next step," said Rui Maia, COO of Iberwind. "ONYX's hardware and software solutions allow us to continually refine our approach to monitoring assets and responding with a maintenance and repair plan. By embracing digital technology, we are able to take advantage of ONYX's high levels of service and flexibility to our needs."

ONYX Insight will be installing ecoCMS, an innovative condition monitoring system that uses Micro-Electro Mechanical Systems (MEMS) technology to increase coverage of sensors on a turbine's drivetrain. Triaxial accelerometer sensors monitor vibration as well as turbine rotor balance and all provide a temperature signal. ONYX's fleetMONITOR™ will allow Iberwind to study turbine performance across its fleet and provide it with the capacity to eventually monitor all turbines in its multi-brand fleet. In choosing a predictive maintenance supplier, Iberwind conducted a rigorous selection process that evaluated technical and service levels to identify best in class for options in the market.

"Iberia is an extremely competitive market, and it is essential for our partners that they are provided with flexible solutions for monitoring their fleets," said Jose Morais, ONYX InSight's Iberia manager. "As we increase our presence in Portugal and Spain, we are pleased to be partnering with a forward-thinking owner such as Iberwind."

MORE INFO www.onyxinsight.com

Iberwind has installed 323 wind turbines under management in Portugal, with capacity of 730 MW, which equates to about 15 percent of wind energy in the country. (Courtesy: Iberwind)

MAINTENANCE

The iSpin technology products available in Japan now

Hokutaku Ltd. and Romo Wind AG recently announced their exclusive partnership for the distribution of iSpin technology-based products and services in Japan. Hokutaku Ltd. will provide Romo Wind's product and service portfolio to the Japanese market and will support the full life cycle from the distribution, installation,

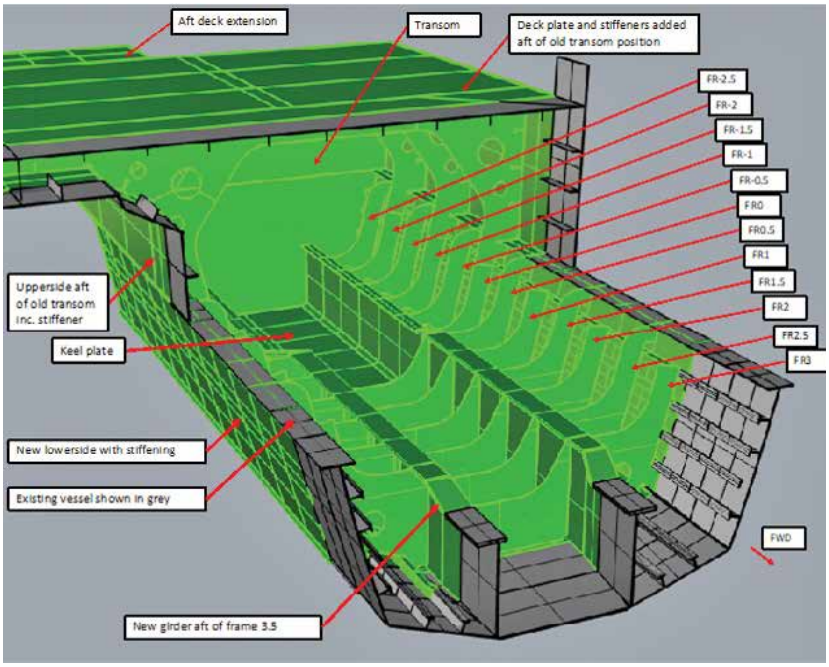
commissioning, and maintenance to measurements and analysis of iSpin measurement data.

With its advanced and accurate wind-measurement capabilities including turbulence intensity, yaw misalignment, and inflow angle measurements, in addition to wind speed and direction, the iSpin equipment is an enabler for load calculations and assessments as well as the optimization of the turbines in terms of yaw misalignment correction.

"With iSpin technology, Hokutaku Ltd. customers will be enabled to detect and correct yaw misalignment, therefore increase the revenues and reduce loads of the wind turbines," said Brian Sørensen, CEO Romo Wind. "In addition, the iSpin technology will allow for the first time to measure the performance of all the wind turbines in a wind farm as well as other important wind-site conditions."

"The ability to measure accurate wind speed, yaw misalignment, turbulence intensity, and inflow angle is key for the optimization of wind turbines in such a complex terrain as we have it here in Japan," said Satoru Yoshida, vice president of Hokutaku Ltd. "We are glad that we are now able to offer the advanced iSpin wind-measurement products and services to our customers exclusively. This will improve wind-turbine performance and contribute greatly to the wind-power industry in Japan."

MORE INFO www.romowind.com



Chartwell Marine has substantial expertise in vessel repurposing, including re-flagging, re-coding, and complete vessel conversion – such as from crew transfer vessel (CTV) to ferry, or leisure fishing boat to workboat. (Courtesy: Chartwell Marine)

MAINTENANCE

Evolving offshore wind scope requires refits of aging CTVs

With a significant proportion of the European offshore wind support vessel fleet entering the latter phases of its operational lifetime or no longer able to meet changing industry demands, there is a growing emphasis on the vessel market to refit or repurpose CTVs.

In doing so, vessel owners and shipyards can seize a commercial opportunity to maximize the value of these assets and support the overall sustainability of the offshore wind sector.

That, at least, is according to Chartwell Marine, a pioneer in next-generation vessel design that has supported a number of offshore wind vessel refit projects in recent months. Chartwell Marine has substantial expertise in vessel repurposing, including re-flagging, re-coding, and complete vessel conversion – such as from crew transfer vessel (CTV) to ferry, or leisure fishing boat to workboat.

While offshore wind is a young sector, with the majority of large-scale European projects no more than 10 years old – and expected to continue operating for 25 years in total – vessel lifetimes do not match those of offshore wind turbines. Furthermore, rapidly evolving construction and operational standards mean that many of the CTVs originally commissioned to service these projects may no longer meet the requirements of offshore wind developers and operators.

This is not to say, however, that these vessels are no longer fit for purpose. Indeed, for vessel owners, there are two main options on the table: One is to repurpose these catamarans for operation in other sectors, or for different functions within offshore wind. Offshore wind CTVs have been redeployed effectively for purposes including survey, dive support and security.

The other option is to conduct refits that extend the operational lifetime of the vessels in offshore wind. This often involves upgrades to propulsion systems, increasing the number of people who can be carried onboard, and lengthening of the hull to enhance deck space and potentially seakeeping. Chartwell Marine has provided design consultancy services to shipyards and vessel owners on a number of these refit projects.

Recent contracts have included supporting shipyard Diverse Marine in full refits of CTVs *Maestro* and *Don Quixote*, both of which were acquired by Turner Iceni in early 2019. *Maestro*, an 18-meter catamaran, has been

refitted with Volvo IPS propulsion system, while *Don Quixote* has been refitted with 1,400 horsepower MAN engines and Hamilton 651 waterjets, and lengthened from 20 to 23 meters. Both are set to re-enter service later this year.

"For a sector like offshore wind, which is founded on principles of sustainability, vessel support is one area where substantial efficiencies can be realized," said Andy Page, managing director at Chartwell Marine. "With robust design support, vessels that are starting to reach the end of their utility for offshore wind operators can either be upgraded in a cost-effective manner to re-enter service or set to work in other maritime sectors."

"This creates plenty of opportunity for U.K. shipyards to carve out a niche in vessel refits – particularly during the winter months when demand drops off a little," he said. "Furthermore, given an overall shortfall of new builds currently in build, and demand for offshore wind crew transfer vessels ramping up considerably, these vessel refits may well help to plug a gap until the next generation of offshore wind CTVs starts to enter operation."

MORE INFO www.chartwellmarine.com

MAINTENANCE

MSA launches new full-body harness lines

MSA recently announced the launch of the new V-SERIES full body harness line for fall protection: V-FLEX™, V-FIT™, and V-FORM™. Each is designed for comfort and differing needs.

With the V-SERIES, users can focus on their work instead of their harness. The exclusive racing-style buckle eliminates the need for chest straps, creating a closer, more comfortable harness. An athletic cut contours the harness to the body for increased upper torso mobility. A pull-down adjustment allows the wearer to easily and quickly make adjustments in order to get the right fit.

The V-FIT harness line. (Courtesy: MSA)

The V-SERIES harness line is suitable for use in multiple work-at-height applications in industries such as construction, general industry, and oil and gas.

MORE INFO MSAsafety.com/vseriesfallprotection

INNOVATION

Deutsche WindGuard accredited for calibrating Lidar

Deutsche WindGuard Consulting GmbH is now accredited according to DIN EN ISO/IEC 17025 for the calibration of nacelle-mounted Lidars. The calibration laboratory can now calibrate all kinds of wind remote sensing devices and completes its range of services in this department.

Nacelle Lidars have gained in importance in the last years — especially with regard to the verification of warranted power curves.

"Measurements with nacelle Lidars have the great advantage over classical

Nacelle Lidars have gained in importance in the last years — especially with regard to the verification of warranted power curves. (Courtesy: Deutsche WindGuard Consulting GmbH)

power curve tests that there's no need for the installation of a met mast," said Dr. Klaus Franke, head of Deutsche WindGuard Consulting's calibration laboratory for remote sensing devices. "Especially in offshore measurements, nacelle Lidars are a cost-efficient alternative."

While nacelle-mounted Lidars are not yet included in IEC standards, they are widely used for power-curve verification measurements.

"We are part of an IEC task group that develops an IEC standard for the use of nacelle Lidars in the frame of wind measurements, which will be published sometime next year," Franke said.

For each measurement, traceable sensors are absolutely essential. The calibrations are conducted on the existing WindGuard test field.

MORE INFO www.windguard.com

INNOVATION

Vestas expands 4 MW platform for sites with extreme weather

As part of its efforts to offer innovative solutions to meet customer needs, Vestas is introducing the V136-4.2 MW Extreme Climate wind turbine. This new variant of the powerful and proven 4 MW platform offers maximum energy production in low to medium wind speeds, while being designed to handle extreme weather conditions that have previously been challenging to exploit.

The V136-4.2 MW Extreme Climate is being introduced at the 2019 Japan Wind Expo to highlight the turbine's specific suitability for many project sites exposed to severe climate in Japan and Asia. The new variant is also applicable for other markets with similar conditions around the world, such as Southern China, Caribbean, and the U.K., for both onshore and offshore sites.

Building directly on the popular V136-4.2 MW turbine, the Extreme Climate variant features design optimizations that include a reinforced blade and a strengthened hub. The new variant is capable of withstanding extreme wind speeds of 53 m/s (exceeding IEC class I extreme wind speed), and extreme wind gusts of up to 74-78 m/s. The variant is also designed to withstand above-average frequency events and intensity of lightning strikes associated with typhoons, such as those seen in Japan.

The V136-4.2 MW Extreme Climate is also highly suitable for areas with low-grid capacity, thanks to Vestas' state-of-the-art full-scale converter that offers advanced active and reactive power capabilities.

"With the introduction of V136-4.2 MW Extreme Climate, Vestas is connecting our proven technology with

The V136-4.2 MW Extreme Climate is being introduced at the 2019 Japan Wind Expo to highlight the turbine's specific suitability for many project sites exposed to severe climate in Japan and Asia. (Courtesy: Vestas)

customized solutions to help customers unlock low to medium wind sites with high turbulence," said Thomas Korzeniewski, Vestas' vice president of Product Strategy. "The larger rotor delivers improved energy production with the strength and versatility necessary to handle extreme wind gusts and high turbulence."

"Vestas' global experience and wide range of industry-leading offerings mean we can offer customized sustainable energy solutions to meet the needs of specific markets like Japan," said Clive Turton, president of Vestas Asia Pacific. "We are building on the reliability of Vestas' 4MW platform to broaden its applicability for diverse and challenging wind and weather conditions."

Ready to meet extreme climate conditions and market requirements, the V136-4.2 MW Extreme Climate leverages Vestas' wide range of turbine options and solutions, including site-specific tower solutions such as large diameter steel towers, transportation solutions for challenging sites, full type certificate for global applicability, as well as project specific solutions such as Vestas Cold Climate Solutions and High Wind Operation (HWO).

Since its introduction in 2010, the Vestas 4 MW platform has built a powerful legacy where ongoing innovations have resulted in up to a 56 percent increase in energy production. Vestas' comprehensive testing program combined with more than 7,000 turbines or 23 GW installed in 44 countries worldwide means the platform has proven its worth under highly diverse conditions.

Serial production is expected by mid-2021 and delivery later that year.

MORE INFO www.vestas.com

INNOVATION

AMETEK Spectro Scientific expands its software platform

AMETEK Spectro Scientific, one of the world's largest suppliers of oil, fuel, and processed-water analysis instrumentation and software, expanded its cloud-based TruVu 360™ Enterprise Fluid Intelligence Platform with two standalone versions — TruVu 360 Basic and TruVu 360 Pro — both of which can be installed on a customer's local PC or corporate server.

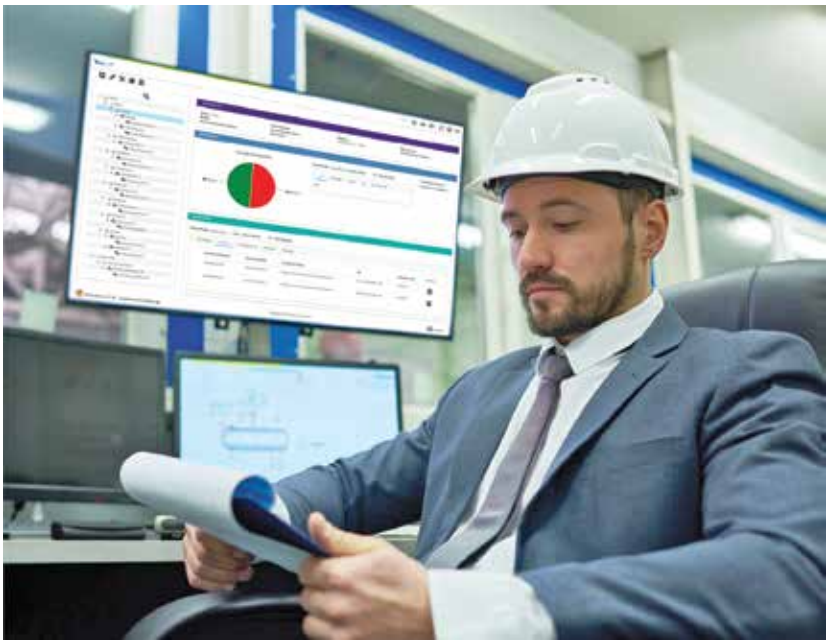
The software integrates Spectro Scientific's oil analysis hardware with data acquisition, reporting, and information management software, including an expert system that provides automatic diagnostics, an intelligence dashboard and recommendations for action.

TruVu 360 Basic is engineered for use with one Spectro Scientific MiniLab on-site oil analysis system for a single user. The software is installed on a non-networked local PC and is ideal for any small reliability team implementing an on-site oil analysis program. TruVu 360 Pro, also intended for use with one MiniLab system, can be installed on a company network server. It features multiple user licenses, which include site user, operator, and reader privileges. The software also provides email notifications about the oil-analysis report.

Together with the original TruVu 360 Cloud version, customers can now choose between TruVu 360 configurations that match their companies' individual IT policies, allowing ease of operation, simplified and fast work flow, an adaptive rules engine, and high-quality oil analysis reports.

The TruVu 360 platform works with the Spectro Scientific MiniLab Series oil analysis hardware — an economical on-site oil analysis system with lab-quality results that doesn't require a special lab facility. The sample volume is small, the operator training is minimal, and the system doesn't require hazardous chemicals or reagents.

When performing measurements on-site, Spectro Scientific's analyzers slash the wait time for analysis results from days or weeks to minutes, compared to lab-based fluid analysis. The analyzers enable users to make immediate maintenance decisions that reduce unexpected downtime and costs, eliminating potential catastrophic machine failures. The data produced also facilitates efficient scheduling of proactive maintenance and fluid re-



AMETEK Spectro Scientific's software integrates Spectro Scientific's oil analysis hardware with data acquisition, reporting, and information management software. (AMETEK Spectro Scientific)

newal actions, improving utilization of resources and machine time.

"The expanded TruVu 360 platform now supports all of our customers in different industries in compliance with their IT policies," said Spectro Scientific senior vice president Yuegang Zhao. "These options help them simplify and streamline the on-site oil analysis process, providing high-quality information and actionable intelligence that facilitates effective decision making."

MORE INFO www.spectrosci.com

CONSTRUCTION

Lee Maynard named new Terex Cranes global sales director

Lee Maynard

Lee Maynard recently became the new tower cranes global sales director at Terex Cranes. Maynard was previously the Terex Cranes director of sales for Europe and Russia in the Mobile Cranes business. In addition, he was also the general manager for the UK&I and will continue in this role until a successor is found.

Maynard will be based in the Schaffhausen Terex Global office in Switzerland and, in his new role, will develop long-term strategies and identify growth opportunities in the global tower crane market with the

The Fred. Olsen Windcarrier vessels have installed more than 400 wind turbines offshore and gained extensive experience installing the latest generation offshore wind turbines on some of the world's largest wind farms. (Courtesy: Fred. Olsen Windcarrier)

objective of increasing the company's worldwide market share and profitability. In addition, Maynard will take over management duties for the global Terex Tower Cranes Sales Team in EMEAR, North America, East Asia, and Australia and New Zealand.

Maynard will be able to draw on his extensive professional experience and crane industry knowledge. A qualified engineer, he has been with Terex Corporation since 2001 as a result of the acquisition of German crane and excavator manufacturer Atlas, and since then, he has been in a number of positions of increasing responsibility. Initially, after switching from engineering, he was a regional sales manager for Terex Construction, and in 2010 became the U.K. & IRL general manager for Mobile Cranes. In 2012, he assumed responsibility for the European sales and service organizations for mobile cranes as part of the management team. Most recently, he was responsible for all sales activities in Europe, Russia, and in CIS member states.

MORE INFO www.Terex.com

CONSTRUCTION

Fred. Olsen Windcarrier wins first contract in Taiwan

Fred. Olsen Windcarrier recently was awarded a contract with Siemens Gamesa Renewable Energy (SGRE) for the transport and installation of wind turbines on the Yunlin Offshore Windfarm in Taiwanese waters for its 8 MW wind turbines.

Fred. Olsen Windcarrier will mobilize one of its special purpose-built jack-up installation vessels in Europe during the spring of 2020, which will head to Asia to start working in this emerging market.

"This is a very exciting project as it is the first large transport and installation project in Asia for us," said Martin Degen, Commercial Manager, Fred. Olsen Windcarrier. "We are glad to have been picked by SGRE as a reliable partner for this new market. The contract will continue to strengthen our relationship with SGRE. We are looking forward to bringing our European experience and capabilities to the project, working with the local supply chain in Taiwan."

"Taiwan is a strong developing market for SGRE, as such it is essential that we operate with partners who we are sure to bring the right team and the right assets for the job," said Russell Brice, Head of Marine Operations, SGRE Offshore. "We are confident that Fred. Olsen Windcarrier

will prove themselves with us again. We are looking forward to be working together again, this time for Yunlin."

For the Yunlin Offshore Windfarm, Fred. Olsen Windcarrier aims at engaging various local stakeholders in their scope of work. This may include ship agencies, installation port authorities, steel fabricators, engineering consultancies, and R&D and education centers.

The Yunlin Offshore Windfarm (640 MW) is about six kilometers off the southwest coast of Taiwan and will feature 80 SG 8.0-167 DD machines. Installation will be split into two phases that will be carried out in 2020 and 2021, respectively. When finished, the Yunlin wind farm will supply power to more than 450,000 homes and reduce CO_2 emissions with more than 916,000 metric tons per year.

Fred. Olsen Windcarrier provides innovative and tailored services for the transport, installation, and maintenance of offshore wind farms.

The Fred. Olsen Windcarrier vessels have installed more than 400 wind turbines offshore and gained extensive experience installing the latest generation offshore wind turbines on some of the world's largest wind farms. The company provides complete project management services and carries a vast engineering expertise in-house and is capable of providing complete turnkey installation solutions for offshore wind turbines with in-house personnel.

MORE INFO www.windcarrier.com

MANUFACTURING

Siemens Gamesa to supply 21 MW for China wind farm

Siemens Gamesa Renewable Energy (SGRE) reached a contract* to supply six SG 3.4-132 wind turbines with a flexible power rating of 3.65 MW to a wind-farm project in Inner Mongolia, China. The project is developed by the State Power Investment Corporate (SPIC) of China, and it is the first order SGRE received from SPIC.

The order also marks the first landing of Siemens Gamesa 3.X platform model in China, and commissioning is expected in August 2019. Siemens Gamesa also will be responsible for the operation and maintenance of the turbines for five years, and six to 20 years warranty for major components.

The project in Holingola, Tongliao city, is designed as a continuation of a circular economy demonstration project with generated electricity to be self-used by an electrolytic aluminum plant of SPIC. The demonstration project maximizes the use of local resources, including wind, coal, water, and heating, etc.

The latest wind project is also expected to gather wind-farm per-

Siemens Gamesa secured its first landing of Siemens Gamesa 3.X platform in China. (Courtesy: Siemens Gamesa)

formance data for a planned 6-GW wind-power base of SPIC that has been approved to establish in Inner Mongolia.

"We're delighted to reach this milestone cooperation with SPIC, one of China's top five power producers," said Richard Paul Luijendijk, CEO of SGRE Onshore APAC. "Based on our global scale and size, business diversification, and technological leadership, SGRE is better positioned than before to support our customers to harness the power of wind in the world's largest wind energy market here and beyond."

SGRE's history and presence in China dates back to 30 years ago, where the company has installed close to 5.2 GW.

The Vestas V110-2.0 MW turbine. (Courtesy: Vestas)

*This order forms part of the order intake disclosed by the company in the Q1 FY2019 results.

MORE INFO www.siemensgamesa.com

MANUFACTURING

Vestas receives 224 MW order in the United States

Vestas has received a 224-MW order in the U.S. for V110-2.0 MW turbines.

The order includes supply and commissioning of the turbines as well as a 10-year Active Output Management 5000 (AOM 5000) service agreement.

Deliveries are expected to begin in the third quarter of 2019 while commissioning is planned for fourth quarter of 2019.

The project and customer are undisclosed at the customer's request.

MORE INFO www.vestas.com

MANUFACTURING

Inox Wind licenses AMSC's 3-MW class wind-turbine design

AMSC, a global energy solutions provider serving wind and power grid industry leaders, recently announced that it entered into an exclusive license agreement for a 3-MW class wind turbine design in India with Inox Wind Limited.

Under the terms of the license agreement, AMSC and Inox have agreed that AMSC will be the exclusive supplier of electric control systems (ECS) for Inox's 3-MW class wind turbine. The terms and conditions of the ECS will be set forth in a separate ECS supply agreement between the parties.

"Inox was among the first manufacturers to produce 2-MW turbines locally, in volume, and quickly established a leadership position in the market based on performance and cost," said Devansh Jain, director of Inox Wind Limited. "Leveraging our vertical approach, which combines best-in-class manufacturing with project development, the production of larger, more efficient 3-MW class turbines will give us the means to augment our market leadership. We remain committed to helping India bridge its power gap with high-performance wind turbines."

"This license agreement opens up the next chapter in our collaboration with Inox," said Daniel P. McGahn, chairman, president, and CEO of AMSC. "Our 3-MW turbine design extends Inox's product line of 2-MW turbines to include 3-MW class turbines and enables the possibility of market expansion. We believe this will place Inox in a strategically competitive position."

AMSC's 3-MW class wind turbine design is required to be certified as having a 3-MW power rating (according to GL2010 onshore guidelines). AMSC's 3-MW class wind turbine may operate up to 3.3 MW under certain grid conditions and certain ambient temperature conditions.

MORE INFO www.inoxwind.com