33 monopiles needed to be upended one by one from their horizontal orientation on the deck of the installation vessel so that they could be used for construction of Japan's first large scale commercial wind farm project. (Courtesy: Akita Offshore Wind Corporation)

CONSTRUCTION

Monopile upending complete for offshore wind project in Japan

As part of the Akita Noshiro offshore wind-farm project's construction phase off the coast of Japan, Akita Offshore Wind Corporation required 33 monopiles to be upended on the deck of the offshore installation vessel so that they could be used for construction of Japan's first large scale commercial wind-farm project.

This was the first time SPMTs had been used for this type of operation in Japan, so strong engineering support from a global team experienced in offshore wind operations would be vital to ensure a safe operation. In particular, close monitoring of tolerances was required throughout, to ensure the SPMTs were not subjected to high levels of torsional load during these highly precise maneuvers.

The operations took place about one kilometer offshore between Ports of Akita and Noshiro, Japan, with main marshalling station in Akita. The 33 monopiles needed to be upended one by one from their horizontal orientation on the deck of the installation vessel.

The monopiles were first loaded by a crane into a cradle and the upending frame, in horizontal orientation. Next, SPMTs connected to the upending frame and the crane hook to their other end. Then the SPMTs were driven forward as the crane hoisted up until safe operational limits were reached.

As each monopile was larger than the deck of the vessel, there was a need for the upending operation to stop and have the crane rotate 180 degrees. To ensure a safe maneuver, it was necessary to minimize the risk of torsion.

The Mammoet engineer team used steering modes that are not in everyday use, allowing the trailers to be put into carousel mode; free-wheeling to follow the motion of the crane above, to which the monopile was still attached. This phase was executed safely and successfully.

During this phase, surveyors monitored the position of the crane hook to reduce the risk of the crane hook being out of level. Each time, the SPMT was driven forward while the crane was

hoisted up until each monopile was free from its upending bucket.

The operations were controlled in the final stages between crane and SPMT operators so that the monopile lifted out of the frame once it was almost vertical. Each monopile was then lowered via crane only into the water for sail-off to the installation site.

Mammoet's global network provided the client with expertise and equipment from Japan, the wider APAC region, as well as the United Kingdom. This allowed the customer to benefit from the expertise behind some of the world's most technically challenging offshore wind projects, but also a supplier that could mobilize resources locally.

The Akita Noshiro offshore windfarm project is expected to provide more than 140 MW of energy a year. Its power will be supplied to approximately 130,000 homes, with commercial operation expected to start in 2022.

MORE INFO www.mammoet.com

CONSTRUCTION

Kardie brings tallest aerial platforms to North America

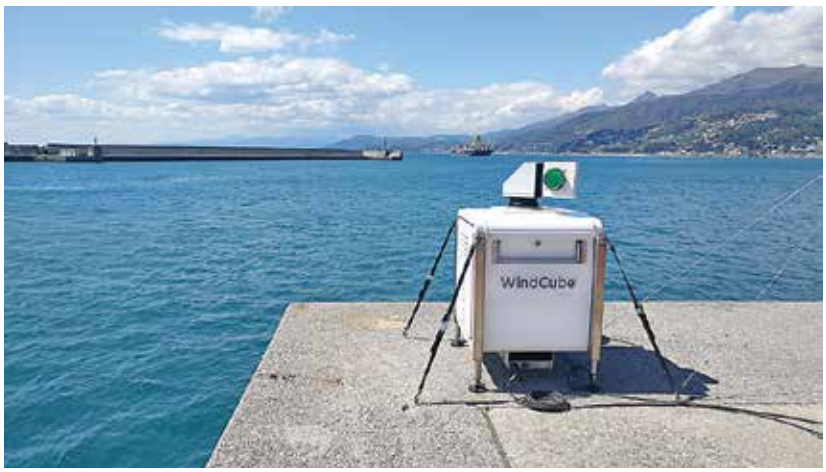
Kardie Equipment, a TGM Wind Company and the largest distributor of the Bronto Skylift in North America, will increase its fleet by more than 65 percent with the purchase of additional aerial work platforms, including Bronto's new S341HLA, which reaches 104 meters (341 feet). This expansion makes Kardie Equipment the sole owner and distributor of the tallest aerial platforms in North America.

"The new aerial lifts will be used to serve customers across numerous industries including wind-turbine generation, transmission and distribution, petrochemical refining, aerospace, and more," said Kevin Darby, founder of Kardie Equipment/TGM Wind Services. "Increasing our inventory of aerial work platforms is critical to meet the rapidly growing demand of both new and existing customers."

The average hub height of wind turbines in North America is 295 feet and rising, because increased altitude means increased wind speed and more power generated. The Bronto S341HLA, a truck-mounted 341-foot aerial work platform, is the ideal solution to the increasing height.

"It has been a privilege to be a part of Kardie Equipment/TGM Wind's growth as their exclusive supplier," said Roberto Quintero, sales and marketing director at Bronto Skylift. "Kevin's entrepreneurial spirit has

Kardie Equipment is the sole owner and distributor of the tallest aerial platforms in North America. (Courtesy: Kardie Equipment)



Developers around the globe are using WindCube to reduce risk, improve bankability and decision-making, and make better investments. (Courtesy: Vaisala)

been the backbone of this rewarding journey, and together with his team, they have consistently exceeded expectations."

The Bronto S341HLA features two telescopic booms, a 6-section main boom, a 3-section cage boom, and an extendable platform with 1,500-pounds safe working load. Mounted on a U.S.-sourced chassis, they can maneuverer safely in worksites and regular road traffic. In addition to a maximum working height of 341 feet, the S341HLA's horizontal outreach is 105 feet.

MORE INFO www.kardieequipment.com

INNOVATION

WindCube Lidar suite maker Leosphere is now Vaisala

Leosphere, maker of the WindCube Lidar suite, is now Vaisala, as it completes integration with Vaisala, who purchased the company in 2018.

From Lidars, sensors, and systems to digital services and actionable intelligence, Vaisala's enhanced range of comprehensive offerings for wind and solar energy applications provides industry-leading integration, scalability, and data quality. The WindCube suite's accurate and reliable intelligence arms decision-makers with the insights needed to innovate, evolve practices, improve accuracy and efficiency, and meet renewable energy challenges with confidence.

"Backed by its 85-plus-year proven track record and global leadership, Vaisala is a leading wind and solar technology partner, driving the successful evolution of renewable energy for a healthier, greener, and more innovative future," the company said in a press release.

MORE INFO: www.vaisala.com/en

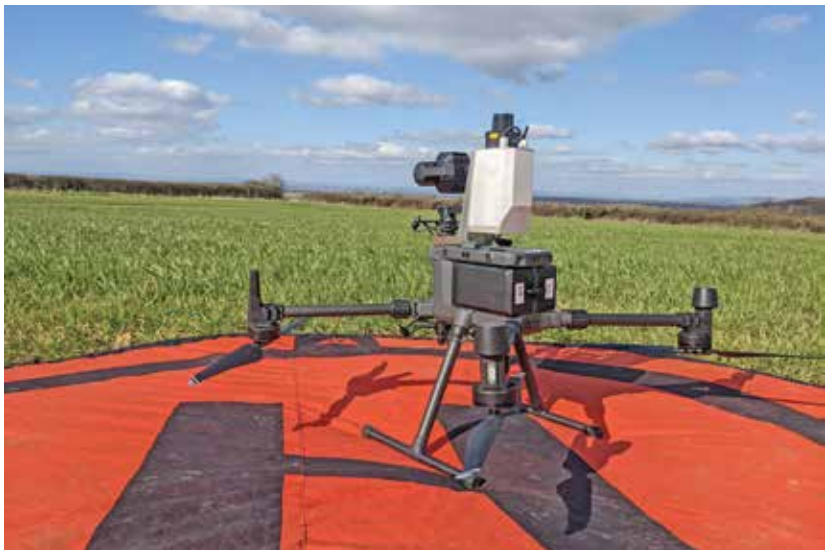
INNOVATION

Perceptual Robotics launches autonomous drone

Perceptual Robotics will launch the DOT autonomous drone, designed to undertake in-depth turbine inspections and analyze the data collected. The company has had DOT in development since its inception. The new drone system has been designed to collect high-quality data from turbines in less than 20 minutes, while offering low operational costs for customers and minimal training for operators. Another key element is DOT's safety features as the system has been designed to avoid potential collision with the turbine.

DOT is named after two prominent female engineers: USA's Dorothy Vaughan, a mathematician and NASA's first black manager, and Britain's Dorothy Spicer, the first woman to gain an advanced qualification in aeronautical engineering. The exclusive software product, designed by Perceptual Robotics, allows drones to use laser and camera sensors to understand the environment the device is in, plan its trajectory and efficiently collect the data required from the turbines.

DOT's design allows it to manage the drone's cameras and automatically



The DOT drone inspection system will be ready for shipping to customers in May following its showcase at Wind Europe. (Courtesy: Perceptual Robotics)

control how it takes photographs. The software can be linked to a tablet device to set up a turbine inspection and receive data. The system reduces the need for skilled operators to undertake inspections, therefore lowering the chance for human error.

DOT was officially unveiled at the Wind Europe event April 5-7, 2022, in Bilbao, Spain. From its stand at 3-E28, Perceptual Robotics will host demonstrations of the DOT drone system and showcase the set-up process via a tablet. The drones will be put through complete simulated missions of turbine inspections, displaying the speed of data collection and the quality of gathered images.

"DOT represents the pinnacle of processing turbine inspection data, combining state-of-the-art data analysis with fast, high-quality imagery and a software system that totally manages the movements and activities of the drone device. We also wanted to make DOT simple and easy for our customers to use 'off the shelf', thereby removing dependence on the skills of the operator to determine the quality of the turbine inspection," said Kostas Karachalios, Perceptual Robotics CEO.

MORE INFO www.perceptual-robotics.com

INNOVATION

Wind turbine prototype reveals spiral airfoil

Golden Ratio Turbine Concepts (GRTC), a fluid flow spiral rotor inventor, recently revealed its advanced 3-D Spiral Wing Airfoil in its newest vertical axis wind turbine (VAWT) prototype. This is the latest version of VAWT devices in the company's "Cyclonic" VAWT Group.

All GRTC turbines incorporate their patented extended spiral leverage arm feature that develops more rotor torque force in less space.

"The new spiral airfoil is a compound blend of transverse spiral line segments, which are intersected by vertical arc segments to form a partially closed area of space having a low cross section reflective convex outer surface that creates a lift force similar to an airplane wing," said GRTC spokesman James Walker.

"These wings overlap each other in succession like the spiral bands of a cyclone and produce an overall turbine profile that facilitates smooth airflow pressure, resulting in a very quiet turbine."

Golden Ratio Turbine Concepts revealed its advanced 3-D Spiral Wing Airfoil in its newest vertical axis wind turbine. (Courtesy: Golden Ratio Turbine Concepts)

The company is focused on developing small on-site devices that use their increased torque to begin generating power in lower wind speeds without noisy blades, contending that their spiral design has more torque that a propeller blade radial design because the distance from the outer spiral tip to its inner linking point is longer than the distance of a radial blade tip to its inner linking point.

GRTC expects a time when increased global energy demands and decreased supplier reliability cause supply chain failure.

Oil independence and developing small on-site and clean-energy solutions are wise investments for a better future.

On-site hybrid wind and solar power is a logical choice for meeting increased electrical needs in homes, offices, schools, hospitals, stores, and factories. Quiet GRTC "Cyclonic" VAWTs can be a part of that energy solution.

MORE INFO
www.goldenratioturbineconcepts.com

INNOVATION

Electro Industries releases software update

Electro Industries/GaugeTech (EIG) recently released V.5.00.0110 of its CommunicatorPQA® power monitoring software. This release primarily supports the Nexus® 1450 Cyber Secure power quality meter's version 4.1 firmware.

The meter's firmware release adds IEC 61850 Ed. 3 protocol support and GOOSE messaging to the meter's advanced capabilities. In addition to this important feature, the CommunicatorPQA® software release supports improved system stability and minor enhancements.

Electro Industries recommends that all CommunicatorPQA® 5.0 customers update to the latest version of the software to access the newest features.

MORE INFO www.electroind.com

MAINTENANCE

Snap-On torque wrenches made for harsh environments

Snap-on Intrinsically Safe ControlTech™ Torque Wrenches are engineered and tested for operation in Class 1 Division 2 hazardous environments (where flammable gases, vapors or liquids may potentially be present). Intrinsically safe equipment is defined as "equipment and wiring which is incapable of releasing sufficient electrical or thermal energy under normal or abnormal conditions to cause ignition of a hazardous atmosphere mixture in its most easily ignited concentration."

Snap-on's Intrinsically Safe ControlTech™ Torque Wrenches comply with key safety standards, including: IEC60079-0, IEC60079-11, UL121201, and CAN/CSA C22.2 No. 213-17, UL 508 (Part One), and CAS C22.2 No. 14-13.The wrenches' battery packs meet UL 2504 standards.

Designed for repeated use, the wrenches are accurate to ±2% clockwise, ±3% counterclockwise, providing data on the exact torque applied – something mechanical wrenches cannot do.

The wrenches come with a selection of interchangeable ISO/IZO heads to handle a variety of torquing applications. The wrenches are also Bluetooth® compatible, enabling recording of torque and turn-angle data. Data transfers using Snap-on's CONNECTORQ app increase quality and traceability.

Key performance features include:

- Torque and angle combo modes to achieve torque, plus angle, in a single motion.
- Calibration factor for extensions and adapters.
- Dual side LED indicator lights with configurable settings for operational guidance.
- Easy-to-read LCD screen, LED indicator lights; audible beep and han-

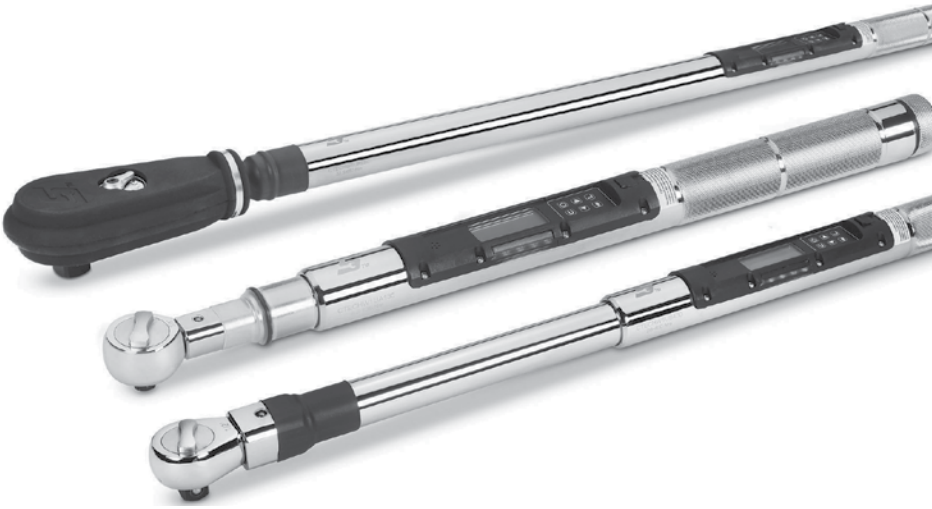
dle vibration work together to signal when torque is within the targeted range.

- On-board rechargeable NiMH battery and smart charging system via USB
- Ingress protected for water and dust rated to IP55.
- Meets or exceeds ISO 6789 standard.
- All-steel body designed for industrial use.
- Two-year wrench warranty; one-year battery warranty.
- Battery cap with integral drop-prevention attachment point.
- Angle range zero to 360°.

Three models of wrenches are available:

- ISO shank; 9 x 12 mm (CTECHW1UA135); 60-1,195 torque range (in.-lbs.); 5-99.6 torque range (ft.-lbs.); 6.8-135 torque range (Nm).
- ISO shank; 14 x 18 mm (CTECHW1UB400); 177-3,540 torque range (in.-lbs.); 14.9-295 torque range (ft.-lbs.); 20-400 torque range (Nm).
- Sealed fixed ratchet; 3/4" (CTECHW1UR650); 288-5,753 torque range (in.-lbs.); 24-479.4 torque range (ft.-lbs.); 32.5-650 (Nm).

MORE INFO www.snap-on.com



Three models of ControlTech Torque Wrenches are available. (Courtesy: Snap-on Tools)

MAINTENANCE

AMSOIL INC. renews APQP4Wind Certification

AMSOIL INC. has renewed its certification with APQP4Wind, a non-profit organization founded by the world's leading wind-turbine manufacturers and suppliers. Its mission is to standardize and simplify processes that ensure product quality across the wind industry. The organization facilitates and strengthens relationships between manufacturers and suppliers to increase efficiency.

"We're excited to continue our relationship with APQP4Wind," said Dave Meyer, vice president, AMSOIL Wind and Industrial Business. "Our certification demonstrates the quality of our products for wind assets. It offers additional assurance to our wind customers that they're getting the best possible lubricants for their equipment."

AMSOIL was the world's first lubricant supplier to earn APQP4Wind certification, in 2021. Today, it is one of two lubricant suppliers to have earned the designation.

When AMSOIL INC. entered the wind industry in 2005, wind-asset managers were struggling to find a wind-turbine gearbox lubricant capable of delivering superior protection

Nearly half the wind turbines in the U.S. use AMSOIL products. (Courtesy: AMSOIL)

without requiring frequent and expensive oil changes.

Many asset managers could expect a high percentage of their gearboxes to fail within the first 10 years of a 20-year design life, driving up operating costs. AMSOIL developed a synthetic gearbox lubricant that delivers protection and longer service life in the demanding conditions in which turbines operate. It has a proven record of more than 10 years of continuous run time with no additive top-offs.

MORE INFO www.amsoilindustrial.com

Siemens Gamesa has started manufacturing of both its patented offshore Direct Drive wind turbine nacelles and patented IntegralBlades at its new manufacturing facility in Le Havre, France. (Courtesy: VINCI Construction France)

MANUFACTURING

Siemens Gamesa opens France manufacturing facility

Siemens Gamesa has started manufacturing both its patented offshore Direct Drive wind-turbine nacelles and IntegralBlades at its new manufacturing facility in Le Havre, France. The world's first facility to encompass both offshore wind-turbine nacelles and blade manufacturing under one roof, it is the largest industrial renewable energy project in France.

A dedicated installation hub is also under finalization on the same plot, allowing direct load out of wind-turbine components to French offshore wind-power plants. Locally in Le Havre, the first 500 positions out of the 750 total direct and indirect jobs to be created have been filled. The remaining 250 positions are expected to be filled by early 2023.

"Producing our first offshore wind-power components in Le Havre is electrifying," said Marc Becker, CEO of the Siemens Gamesa Offshore Business Unit. "This investment serves as a major driver of the economic growth story in Normandy and in the French offshore wind industry. With the world's first offshore nacelle and blade factory under one roof, we can unlock the power of wind for our customers and the people of France. We are energized to lead the way, especially coupled with solid orders and the government's recent French Offshore Sector Deal."

Siemens Gamesa and local partners UIMM Le Havre, AFPI, and AFPA have created a dedicated training center for new employees and the new offshore wind specific competencies that are needed. This investment in people is the first training center in France solely dedicated to the production of wind turbine nacelles and blades.

"The first nacelles and blades headed for the Bay of Saint Brieuc and the Fecamp projects are tangible proof of the power of commitment to renewable energy in France," said Filippo Cimitan, managing director of Siemens Gamesa France. "The French Offshore Sector Deal recently signed by the French government commits to 18 GW to be installed by 2035 and for awards growing from 2 GW per year from 2025 onwards. The growth path is crystal clear. We look very much forward to executing our strong French offshore order pipeline with components from the plant."

MORE INFO
www.siemensgamesa.com/en-int

2022 INTERNATIONAL OFFSHORE WIND PARTNERING FORUM

April 26-28, 2022
Atlantic City, New Jersey
2022ipf.com

The 2022 Offshore Wind International Planning Forum (IPF) is the premier offshore wind energy conference in North America. It connects global leaders and businesses in the supply chain and offers unparalleled networking opportunities.

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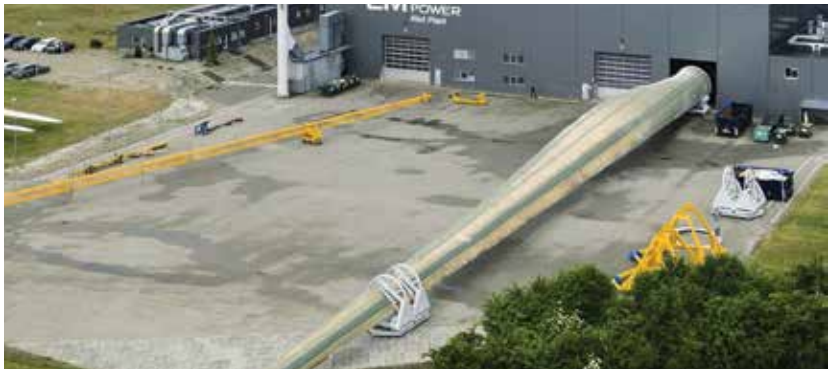
PHOTO COURTESY OF VESTAS

MANUFACTURING

Vestas partners for turbine blades in Brazil



Vestas and LM Wind Power's multi-year agreement includes production of V150-4.2 MW turbine blades for primarily the Brazilian market. (Courtesy: LM Wind Power)

Vestas has strengthened the flexibility of its global manufacturing footprint with a supply agreement with LM Wind Power, a manufacturer of wind blades.

The multi-year agreement includes production of V150-4.2 MW turbine blades for primarily the Brazilian market with the flexibility to export if applicable.

LM Wind Power will supply the blades from its factory in Ipojuca, in the state of Pernambuco in Brazil.

With production scheduled to commence in the second half of 2022, the new production will add local jobs, spur direct and in-direct investments in the Brazilian supply chain, and expand Vestas' global manufacturing setup.

"This partnership is a good example of how we develop and expand the wind-energy supply chain to drive the needed scale of renewables by increasing the use of standardized components and shared manufacturing operations between OEMs, thereby adopting a similar approach to the automotive industry," said Tommy Rahbek Nielsen, executive vice president & chief operating officer of Vestas. "We have chosen to work with LM Wind Power because of their proven and extensive design and engineering capabilities as well as their proven global footprint."

MORE INFO www.vestas.com