



Ian Baylis, managing director of Seacat Services, and Matthias Reiker, finance director of Triton Knoll. Triton Knoll will be the next major offshore wind construction project to enter U.K. waters. (Courtesy: Triton Knoll)

## CONSTRUCTION

### Triton Knoll selects Seacat Services for offshore support

Class-leading offshore energy support vessel (OESV) operator Seacat Services has signed a long-term deal to support the construction phase of Triton Knoll offshore wind farm.

The contract, which includes options for further vessel charters, will initially see two Seacat Services OESVs – one 26-meter and one 24-meter catamaran – operating out of Triton Knoll's new Grimsby construction base, providing specialist crew transfer and logistical support at the 90-tur-

bine, 857-MW project off the U.K.'s East Coast.

With offshore construction set to commence in the first quarter of 2020, the first of the two vessels will begin preparation works at the project this winter, with the second set to join her in April 2020. Both are set to remain on the project until the end of 2021.

Triton Knoll will be the next major offshore wind construction project to enter U.K. waters when the first components are installed next year, and it has already made significant progress during the installation of the onshore electrical system. Once fully operational, Triton Knoll will be capable of generating enough renewable energy for the equivalent of more than 800,000 typical U.K. households.

Throughout construction, the wind-farm project continues to support the ongoing development of the domestic supply chain and recently launched a local recruitment drive for long-term operations technicians on the project. The contract with Isle of Wight-based Seacat Services extends a relationship that has already seen the project owner and vessel operator work together at Galloper Offshore Wind Farm.

Seacat Services' entire fleet of 14 state-of-the-art OESVs has been built in the U.K., with two further catamarans under construction at the Diverse Marine shipyard in Cowes.

"We're delighted to bring Seacat Services into the Triton Knoll team, further strengthening our project

presence in Grimsby and reinforcing our commitment to the U.K.'s offshore supply chain," said Matthias Reiker, finance director for Triton Knoll. "It is vital that the construction of the project is conducted as efficiently as possible while meeting our highest safety standards. In light of this, Seacat Services has proved a natural fit as a vessel provider, and we look forward to progressing our state-of-the-art project with them."

The deal reaffirms the expertise of Seacat Services in managing complex logistical charters for large-scale offshore wind construction projects. For the duration of the contract, the pair of Seacat Services vessels will be operating out of the Port of Grimsby and will work in conjunction with the on-site Service Operation Vessel (SOV) as part of a shift-based approach that will keep them available on a 24-hour basis at the height of construction activity.

"During the time-sensitive offshore wind construction phase, the importance of a finely-honed approach to vessel management cannot be understated," said Ian Baylis, managing director of Seacat Services. "It not only ensures maximum 'time-on-turbine' for project technicians to keep the project on track but can also create wider operational efficiencies that have an impact across the board. Having worked out of Grimsby previously, we're looking forward to returning later this year and getting the project underway."

**MORE INFO** [www.tritonknoll.co.uk](http://www.tritonknoll.co.uk)

## CONSTRUCTION

### ALLETE Clean Energy celebrates record-setting year

ALLETE Clean Energy is in the middle of its biggest wind-energy construction year.

ALLETE Clean Energy is poised to nearly double its carbon-free wind

capacity to more than 1,000 MW with three new wind farms under construction in 2019 and 2020. Its renewable wind projects will support the economies of local, rural communities in seven states with jobs, taxes, donations, and volunteer activities.

New projects include the Diamond Spring wind site in Oklahoma that will sell renewable wind power to Walmart, Starbucks, and Smithfield Foods; Diamond Spring will be the largest wind facility owned by ALLETE Clean Energy — producing enough power for 114,000 homes and increasing ALLETE Clean Energy's total wind capacity to approximately 1,000 MW at nine sites. Other projects are the Glen Ullin wind site in North Dakota that will sell energy to Northern States Power, an Xcel Energy subsidiary; and the South Peak wind farm in Montana that will sell its wind power to North-Western Energy.

"The wind-energy industry is creating meaningful economic growth for state and local governments, landowner partners, vendors, and employees across the country," said ALLETE Clean Energy President Allan S. Rudeck Jr. "These opportunities will continue to grow as society demands cleaner forms of energy. Our ALLETE Clean Energy team is committed to answering the call to transform the nation's energy landscape while creating growth for communities where we operate and building value for ALLETE shareholders and our customers."

Wind technician is the second-fastest growing occupation in America, and ALLETE Clean Energy's continued growth and investment in clean energy means the company will soon need wind technicians in Oklahoma, North Dakota, and Montana while maintaining its current sites in Pennsylvania, Iowa, Oregon, and Minnesota. The company has grown from four employees in 2011 to more than 80 in 2019 while delivering increasing amounts of clean and affordable energy to its customers.

As a Yellow Ribbon company, AL-

LETE Clean Energy also is committed to hiring and supporting veterans, military members, and their families. With their technical skills and team-oriented work experience, veterans and service members find jobs in the renewable wind sector at a 67 percent higher rate than in other industries.

"Our talented employees are at the heart of our success, and as we grow there will be more opportunities to join our team," Rudeck said.

**MORE INFO** [www.allete.com](http://www.allete.com)

## CONSTRUCTION

### Pattern Development begins operations at Grady Wind Power



Grady Wind in Curry County, New Mexico. (Courtesy: Pattern Development)

New Mexico's newest wind-power facility is now up and running. Pattern Energy Group 2 LP ("Pattern Development") recently completed construction and began operations at its 220-MW Grady Wind facility in Curry County, New Mexico. This is the third and final phase of a 544 MW suite of wind projects, which now represents the largest investment in clean power in the history of New Mexico.

"The successful completion of Grady Wind represents an important step in New Mexico's evolution as a major renewable energy producer," said Mike Garland, CEO of Pattern Development. "As the leading wind

developer and operator in New Mexico, we are proud to be helping position New Mexico as a wind-energy leader. We also plan to ramp up construction in early 2020 on more than 800 MW of new wind facilities in central New Mexico, creating hundreds of new construction jobs and generating billions of dollars in economic impact. As wind- and solar-energy development grow throughout the state, New Mexicans will reap the economic benefits.”

The construction phase of Grady Wind created hundreds of jobs for New Mexicans, and it is now delivering additional economic benefits including land-lease payments to local landowners and tax revenue for the host communities of eastern New Mexico. The facility employs approximately 20 full-time personnel for ongoing maintenance and operations.

Grady Wind is using 84 Siemens Gamesa 2.625 MW wind turbines with 120-meter rotors. During each year of operations, the 220-MW facility will generate energy equal to the needs of nearly 90,000 homes. Grady Wind has a 25-year Power Purchase Agreement for 100 percent of the energy produced, and it will deliver wind power across the Western Interconnect transmission line that was also developed and successfully placed into service in 2017 by Pattern Development.

**MORE INFO** [www.patterndev.com](http://www.patterndev.com)

## INNOVATION

### Siemens Gamesa builds world's largest blade test stand

Siemens Gamesa Renewable Energy (SGRE) has begun construction of the world's largest wind-turbine blade test stand in Aalborg, Denmark. The site will be capable of performing full-scale tests on the next generations of SGRE rotor blades and is expected to be fully operational before the end of 2019.

This significant R&D investment



The first tests on the stand will be on the 94-meter-long blades for the SG 10.0-193 DD offshore wind turbine. (Courtesy: Siemens Gamesa)

in extensive testing will represent additional savings for SGRE's clients in the future. Such high value-adding R&D activities enable the company to significantly reduce the risk of technical issues and simultaneously deliver wind turbines that are innovative and reliable.

“The first tests will be on the 94-meter-long blades for the SG 10.0-193 DD offshore wind turbine, which are almost the same length as one soccer field,” said Vicente García Muñoz, head of Validation Means Management at SGRE. “We are, however, building the test stand to accommodate the blade sizes that we will see in the future.”

The gigantic structure in Aalborg will have more steel rebar reinforcement per square meter than a wind-turbine foundation, so that it has the capability to accelerate the test and prove full reliability over the lifetime of the blade in the shortest possible time, while respecting IEC regulations.

**MORE INFO** [www.siemensgamesa.com](http://www.siemensgamesa.com)

## INNOVATION

### Chartwell expands to meet demand for next-gen vessel design

Chartwell Marine, a pioneer in next generation vessel design, has an-

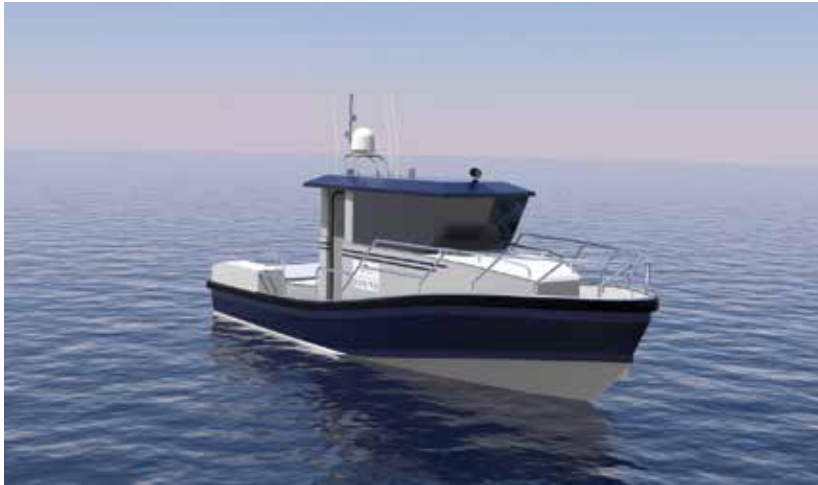
nounced significant investment and growth in its team as it responds to growing global demand for its specialist vessel design services. In particular, Chartwell's commercial activity over the past 12 months has been driven by growth markets as such offshore wind and vessel hybridization, alongside a clear need for the “next generation” of specialist workboats that respond effectively to new operational requirements and demands.

To support an increasing number of global vessel design and consultancy contracts, Chartwell is investing in three key areas: The first is in personnel, with two new permanent staff joining the seven-strong specialist design team, and the appointment of reputed naval architect, Professor Bob Cripps, as non-executive director. The second is in a new Southampton HQ at Deacons Boat Yard, Bursledon, which Chartwell's expanding team will use as a hub for serving clients across Europe, the U.S., and Asia. The third is a significant investment in software and training for all members of the team.

The emergence of offshore wind across these regions has been a key driver of innovation in vessel design, with vessel operators in established markets seeking new crew transfer vessels (CTVs) that capitalize on lessons learned to date — while new offshore wind markets such as the U.S. and Taiwan look to refine this proven formula for application in new operating environments.

Launched in late 2018, Chartwell Marine's Chartwell 24 catamaran has been designed to meet these needs and has generated substantial interest from the international offshore wind development community. The business received its first two Chartwell 24 orders from class-leading vessel operator, Seacat Services, earlier this year.

Simultaneously, increasingly stringent emissions regulations worldwide are leading maritime businesses, including offshore wind vessel operators and port authorities, to carefully consider their carbon footprints, making the design of effective hybrids increasingly important.



In conjunction with U.K. boat builder Wight Shipyard Co., Chartwell Marine unveiled the first Chasewell 9-meter hybrid patrol boat in June 2019. (Courtesy: Chartwell Marine)

Chartwell Marine is swiftly establishing a strong track record in the area of hybrid propulsion, having led on a number of pioneering projects over the past 12 months. In conjunction with U.K. boat builder Wight Shipyard Co., the company unveiled the first Chasewell 9-meter hybrid patrol boat in June 2019 — a vessel design which will set new standards for clean, low-cost port operations.

In addition, Chartwell Marine was selected by a leading U.S. institution to design and specify build for a unique U.S. hybrid vessel. The 65-foot high-performance catamaran has been designed to meet EPA Tier 4 emissions standards, setting a benchmark for vessel operators and boat builders in the U.S. and further afield.

These high-profile projects have been accompanied by a wide range of bespoke design briefs, responding to the operators' unique requirements — which include the Catchwell fishing vessel, Chartwell Rib and several new yacht designs capitalizing on lessons learned from the rapidly developing workboat market. Each design leverages Chartwell Marine's R&D expertise — particularly in the area of hull design, where computational flow dynamics (CFD) modeling and scale prototype model testing has been used to reduce drag and improve seakeeping for superior speed and performance, while

also lowering emissions.

**MORE INFO** [www.chartwellmarine.com](http://www.chartwellmarine.com)

## MAINTENANCE

### AI engine developed for blade-damage detection

Sulzer Schmid, a Swiss company pioneering UAV technology for rotor blade inspections, and NNAISENSE, a world leading artificial intelligence specialist, have partnered to develop an artificial intelligence engine to automatically detect rotor-blade damages on wind turbines. This leapfrog technology is expected to bring the twin benefits of improving the productivity and consistency of blade-inspection processes.

With this new development effort, the two partners are aiming to build the industry's most powerful artificial-intelligence engine able to recognize damages based on inspection-image material. The initial version will be able to flag all areas of concern on any given damaged blade. Ensuing upgrades will add other capabilities, such as the ability to establish damage categories and severity levels.

“Maintaining the structural integ-

riety of rotor blades is critical to maximizing energy output and ensuring the safe operation of wind turbines,” said Faustino Gomez, CEO of NNAISENSE. “We are convinced that we will be able to transfer our extensive expertise in surface defect recognition from other industries to the wind industry and are looking forward to our cooperation with Sulzer Schmid, an innovator in its own space.”

The autonomously flying drones of the 3DX™ Inspection Platform of Sulzer Schmid assure high-definition quality and consistent image acquisition time as well as 100-percent blade coverage while minimizing human errors and operational risks. The cutting-edge image assessment tools of the platform ensure detailed and efficient damage assessment. With the support of an AI-enabled inspection software, the review work of blade experts will be greatly facilitated. Instead of having to review the entire surface of the blades, they will simply need to focus on the pre-selected areas of concern. This technology progress will not only significantly boost the productivity of the reviewing teams but will also improve the quality of damage annotation processes.

“Maximizing end-to-end productivity is a key success factor in the highly competitive market of wind-turbine inspection solutions,” said Christof Schmid, COO and co-founder of Sulzer Schmid. “Thanks to our collaboration with NNAISENSE, we will be able to push the envelope in this area and significantly advance the automation capabilities of our inspection platform.”

“We are very excited about our collaboration with NNAISENSE, a true leader in the visual recognition of



The initial version of the AI engine will be able to flag all areas of concern on any given damaged blade. (Courtesy: Sulzer Schmid)



surface damages by means of AI,” said Tom Sulzer, CEO and co-founder of Sulzer Schmid. “This will further enhance the added value we provide for our customers and partners.”

**MORE INFO** [www.sulzer-schmid-labs.ch](http://www.sulzer-schmid-labs.ch)

## MAINTENANCE

### Rotos 360 completes offshore blade repair at Westermost Rough

For nearly a decade, Rotos 360 has developed its position as a global market leader in turn-key solutions for onshore and offshore wind-turbine blade inspection, preventive maintenance, and repair technology. Part of James Fisher and Sons plc, the company has recently completed a successful offshore internal blade repair campaign alongside partners, SGRE, at Westermost Rough Windfarm.

As part of the six-month project, completed on time and within budget, Rotos 360 provided the wind farm with a full turnkey solution, which included labor and vessel supply and full inspection and repairs as well as a follow-up analysis.

“Rotos 360’s professionalism was evident right the way through the project, from the conception and planning of the works, through the project execution and into the reporting and documentation,” said John Dykes, senior project manager at SGRE. “Their commitment to safety and quality was exemplary and was a key factor in the project reaching a successful outcome.”

Westermost Rough Wind Farm is an offshore wind farm about 10 kilometers northeast of Withernsea, off the Holderness coast in the North Sea. It has 35 wind turbines and covers an area of approximately 35 square kilometers.

Rotos 360 carried out 38 internal blade repairs. The project was led by Rotos 360’s Project Manager Simon Wood and a SGRE technical project manager with the repair works com-



Westermost Rough Wind Farm is an offshore wind farm about 10 kilometers northeast of Withernsea, off the Holderness coast in the North Sea. (Courtesy: Siemens Gamesa)

pleted by the Rotos specialist complex blade teams.

“We would like to thank SGRE and the Orsted site team for its support over the last six months in delivering a safe project, on time and within budget,” said John Galliford, operations director at Rotos 360. “This project has further complemented our 100-percent safety track record with zero lost time incidents. Since 2013, we have grown consistently through our innovative, forward-thinking solutions to complex blade repairs, a multi-skilled workforce, and trusted reputation.”

Rotos 360 is part of James Fisher and Sons plc, a leading provider of specialist services to the marine, oil and gas, and other high assurance industries worldwide. Rotos 360 is a specialist in wind-turbine operations and maintenance in onshore and offshore environments. The company has the expertise to identify and repair damage, excessive wear, and other potential issues that can affect wind-turbine blades. By using advanced aerospace-grade composite repair technology, Rotos 360 can ensure maximum restoration, even in inclement weather conditions.

**MORE INFO** [www.rotos360.co.uk](http://www.rotos360.co.uk)

## MAINTENANCE

### Checkmate launches Atom Xtreme self-retracting lifeline

Checkmate, the U.K.-based Pure Safety Group (PSG) brand, unveiled its new Atom Xtreme 6-foot self-retracting lifeline (SRL) in North America. The product is significant in that it is the smallest and lightest fall arrest block in the world and one of a select few Checkmate products available in North America.

“The Atom Xtreme is a totally new concept in design engineering, featuring a revolutionary triple micro pawls lockout system and full internal braking mechanism never before seen in an SRL,” said Oliver Auston, chief innovation officer for PSG.

Auston added that the brand’s expansion outside of Europe was part of its strategy when Checkmate joined the PSG family in 2018. The first Checkmate product launched in North America, the TR3 tripod for confined space rescue and lifting, was announced in April 2019.

The Atom Xtreme’s lifetime is made of Dyneema® webbing. It features three micro pawls that operate



The Atom Xtreme 6-foot self-retracting lifeline. (Courtesy: Pure Safety Group)



The Global Wind Organisation (GWO) is a non-profit focused on providing standardized safety training and emergency procedures across the industry worldwide. (Courtesy: GWO)

independently for faster lock on. Its internal slipping brake controls the energy from a fall without the need for an external energy absorber. The load-bearing steel chassis is internal and hot rolled to provide a structural metallic core and protected by durable composite external protective housing. The product's swivel incorporates a fall indicator that clearly shows if the device has been subjected to a shock load and has a 360-degree rotation and 180-degree pivot to ensure the block remains in the correct orientation in any working condition. Connector options include steel and aluminum snap and rebar hooks. The alloy scaffold hook is rated for 5,000 pounds and gate-rated for 3,600 pounds. The 25/32-inch eye or the fall indicating swivel top connection allows connection to a range of karabiners and rebar hooks, and the external tail webbing allows for easy reach when attached to the red D-ring.

The SRL is offered in single and dual configurations and accommodates a user weight of up to 420 pounds. It meets ANSI Z359.14 2014 Class A and ANSI A10.32:2012 standards and OSHA 1920 and 1926 Subpart M.

**MORE INFO** [www.puresafetygroup.com](http://www.puresafetygroup.com)

## MAINTENANCE

### North American firms join to focus on wind safety

North America's leading wind-power companies are joining together within the Global Wind Organisation (GWO), a non-profit focused on providing standardized safety training and emergency procedures across the industry worldwide.

Members of the GWO North America committee represent wind-turbine manufacturers and owner-operators including:

- ▀ Brian Walencik, GE Wind, On-shore (Chair).
- ▀ Gary Aucoin, Equinor.
- ▀ Karl Delooff, Acciona Energia.
- ▀ Adell Heneghan, E.On Climate & Renewables.
- ▀ Michael Hanson, GE Renewables – Offshore.
- ▀ Isabelle Le Beau, Enercon.
- ▀ Autumn Lewis, The Nordex Group.
- ▀ Dan Ortega, Vestas.
- ▀ Geoffrey Schmidt, Siemens

Gamesa.

► David Yang, Ørsted.

A partnership of leading global companies, GWO is responsible for a portfolio of training standards designed for the industry, by the industry.

Training modules include basic safety, basic technical, advanced rescue, enhanced first aid, and blade repair with new rigger signal person training standard now available. Training records are verified online through the GWO WINDA database, allowing companies to check the certification status of their employees and potential recruits.

“The wind-turbine industry is growing as the demand for renewable energy is accelerating,” said Brian Walencik, chairman of the GWO North America committee and EHS Leader for GE Wind Onshore. “The challenge we all face is hiring qualified technicians who have recognizable safety training and technical skills so they can more efficiently and effectively help meet demand while reducing total injuries.”

Highlights of the growth of the wind turbine industry include:

► In April, renewables eclipsed coal generation in the U.S. for the first time. The Energy Information Administration (EIA) estimates renewables outperformed coal by 16 percent in April. Wind energy is now the lowest-cost option for new electricity generation in Canada.

► Approximately 11 GW of wind capacity is scheduled to come online in 2019 in the U.S., which is the largest amount of capacity installed since 2012. The annual growth rate of wind energy is 20 percent for the past 10 years in Canada.

► The U.S. wind industry now employs a record 114,000 men and women, according to the American Wind Energy Association (AWEA). In Canada, the employment growth rate is similar.

“The role of our committee is to determine the best ways to collaborate on standardized training and procedures to benefit the industry, training providers, our employees, and contractors,” Walencik said. “At the end of the



The SG 4.5-145, a benchmark solution for sites with medium winds, has been designed to offer a flexible rating ranging from 4.2 to 4.8 MW. (Courtesy: Siemens Gamesa)

day, the goal is simple: safety.”

**MORE INFO** [www.globalwindsafety.org](http://www.globalwindsafety.org)

## ► MANUFACTURING

### Siemens Gamesa reinforces partnership with project expansion

Siemens Gamesa has been selected by MidAmerican Energy Company for the Southern Hills Expansion wind-power project, which will feature 21 SG 4.5-145 wind turbines, operating at 4.8 MW, and will be in Iowa. This project also features the company’s premier service and maintenance agreement for three and a half years.

This turbine model, a benchmark solution for sites with medium winds, has been designed to offer a flexible rating ranging from 4.2 to 4.8 MW, increasing its adaptability to be configured for optimal performance in each individual project, achieving maximum returns.

“We are once again proud to have been awarded a project by MidAmerican Energy Company, strengthening our long-standing relationship with them,” said José Antonio Miranda, CEO of Onshore Americas at Siemens

Gamesa Renewable Energy. “We have had great success with the SG 4.5-145 wind turbine, with over 1.4 GW sold in the U.S., Canada and Mexico, and are excited to continue growing that number.”

Siemens Gamesa has installed more than 10,000 wind turbines in the U.S. totaling about 20 GW of installed capacity. In Iowa, Siemens Gamesa has installed nearly 1,400 wind turbines for a total of almost 3.5 GW. Of that, 1,164 units for a total capacity of nearly 3 GW are with MidAmerican Energy Company, highlighting the strong collaboration of both companies.

**MORE INFO** [www.siemensgamesa.com](http://www.siemensgamesa.com)

## ► MANUFACTURING

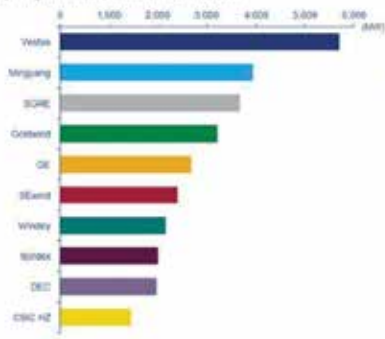
### Wind turbine order capacity hit a record high in Q2 2019

Global wind-turbine order intake increased 11 percent YoY, overtaking the previous record set in Q4 2018 by 13.2 GW, according to new research from Wood Mackenzie.

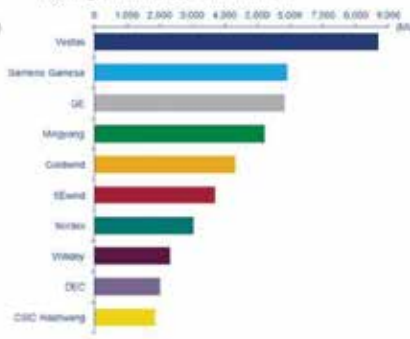
As noted in the Wood Mackenzie report, “Global Wind Turbine Order Analysis: Q3 2019,” developers globally



Top 10 global firm order intake Q2/2019



Top 10 global firm order intake 1H/2019



Vestas won the largest share of order capacity for the fifth straight quarter, enjoying the best quarter for an OEM in any year. (Courtesy: Wood Mackenzie)

ordered a record 31 GW of wind-turbine capacity in Q2 2019. Demand in China and the U.S. contributed to a total of 79 GW ordered over the last four quarters, despite a decrease of 41 percent YoY in Europe during Q2. China and the U.S. enjoyed top quarters for capacity ordered as developers rushed to procure turbines with sufficient time to commission projects before 2020 subsidy deadlines in both countries.

“Developers in China ordered more than 17 GW in Q2 2019, a 267 percent uptick YoY compared to Q2 2018; 71 percent of firm-order capacity was secured in the Northern region’s onshore wind market in Q2 2019,” said Luke Lewandowski, Wood Mackenzie director of Americas Power & Renewables Research. “The order volume for five major developers in China exceeded 1 GW last quarter. The record quarter in China included more than 3 GW of offshore capacity, nearly 2 GW more than in Q2 2018 and a 800 MW increase on the previous quarterly record in the country (Q1 2019). This added to a backlog of nearly 12.5 GW.”

Vestas won the largest share of order capacity for the fifth straight quarter, enjoying the best quarter for an OEM in any year.

“Despite a massive quarter for orders in China, diversity in the market – illustrated by seven OEMs with more than 1GW of order capacity – prevented a dominant leader, which allowed Vestas to retain the top spot,” Lewandowski said. “Eight of the top 10 onshore

models in Q2 are manufactured by Chinese OEMs, six of which made the top 10 for the first time ever. All six were new models that had never been ordered publicly prior to Q2. Vestas was the only non-Chinese OEM with any models in the top 10.”

Order intake in the 4.0-4.99-MW segment increased for the fifth consecutive quarter, exploding to more than 9 GW of orders.

“China, the U.S., and Brazil continued to lead the way in this ratings segment, with 91 percent of capacity orders coming from those three countries,” Lewandowski said. “Vestas, SEwind, Mingyang, Goldwind, and DEC compiled orders for more than 1 GW in this ratings segment.”

Turbine pricing increased in several markets due to strong demand and larger, newer, more expensive models hitting the market.

“Pricing in the U.S. and China increased due to strong demand, as order books continue to fill up in preparation for 2020 installations,” Lewandowski said. “Turbine prices in India have remained unchanged QoQ as developers push back against aggressive auction price ceilings set by the government, however the U.S. dollar has gained 4 percent in value against the Indian rupee since July 2019. This makes Indian turbine prices lower in USD. Newer models in the market and demand for larger turbines in Brazil caused pricing quotes to rise.”

**MORE INFO** [woodmac.com](http://woodmac.com)

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