



Telemetry Load Pin TW-3.0

The customized wireless load pins are used for cable pulling applications in the construction of offshore wind turbines. (Courtesy: DLM Wireless)

## ► CONSTRUCTION

### DLM Wireless supplies load pins for Atlas winches

DLM is a specialist in the design, manufacture, repair, and calibration of load cells, load monitoring, and cable-working equipment for the offshore, renewable energy, marine, subsea, and lifting and rigging industries. In this instance, it supplies load pins for installation by Atlas in various capacity capstans, which work in tandem with hydraulic power units (HPUs). The “load pin winches” are typically purchased by Atlas’ clients for long-term use.

“Atlas is a valued customer that uses our load pins in their winches for this important end-use application, but we have collaborated on several projects over the years, and we also manufacture force measurement solutions for other projects in this fast-paced industry,” said Martin Halford, managing director at DLM. “We supply the load

pins ready-machined; they just need to be installed in the winch-mount point. Our respective design teams communicate and share drawings to make sure the items fit and work together.”

When constructed, the power generated by a turbine is transmitted to an offshore substation before then going to the mainland. This requires miles of subsea cabling, and the final stage of pulling cables into the foundation of each turbine or to the substation is completed by special winching equipment and, here, a state-of-the-art load monitoring system is provided via the load pins. The equipment has combined on various U.K. and European offshore wind farms.

Anton Lavery, managing director at Atlas, said the final section of each cable — approximately the last 200 meters — is pulled from a vessel into the base/foundation of a turbine or to the platform of an offshore substation. The electrical cable is high specification and high value, and it is, therefore, important to monitor the load applied during the pulling process.

“A spike in the load applied might indicate a problem, and it is also im-

portant that the cable installers can demonstrate and prove that the cable has not been over-strained during installation,” he said. “Cables have a maximum load that they can be exposed to, and if this is exceeded, the cable warranty will be invalidated.”

Historically, Atlas has produced several six-ton capacity capstan winches and HPUs, having originally provided them for a client called Cwind in 2014. Last year, it supplied a larger, nine-ton unit to a client before taking an order for a further eight of the same capacity. Atlas has since designed 11-ton and 12-ton capstans, which follow the same design concept, incorporating load pins. The winches and HPUs are produced by its manufacturing partner, Marotechniek, based in the Netherlands.

When Atlas places an order, the load pins are designed by DLM’s engineering team using in-house SolidWorks and other computer-aided design (CAD) modeling software, at which point the client can sign off on technical drawings. The pins are then machined from stainless steel using a computer numerical control (CNC)

lathe at DLM's sister company, Vulcan Offshore. Once a load pin returns to DLM, it is ready for the strain gauging process, which is a "very intricate and delicate process," Halford said.

Next, DLM builds the TW-3.0 transmitter electronics into the orange telemetry end cap, designed by in-house engineers, and wires it up to the strain gauges. The load pin is then proof loaded, calibrated, and tested prior to goods outward inspection and finally dispatch.

"Each (load pin) is generally different to the next as they are typically custom-designed for the application," Halford said.

"The common part is the telemetry end cap, which customers and end users are familiar with on several of our load pin/shackle load cells and running line monitoring products. Every one of our wireless products uses our

own proprietary TW-3.0 electronics."

Notably, load pins represent approximately 60 percent of all DLM load cell sales, and it can custom-design to any size. They can be paired with a TW-3.0-T display, which has the capability to integrate with data-logging/load test software on a PC, log directly onto a USB stick plugged into the base, or send out an analog signal to a PLC system, depending on the model chosen. The handheld can communicate with up to 12 load cells simultaneously and one load cell can be connected to an unlimited number of displays.

"This makes them ideal for use in cable pull-in applications as you can have one local winch operator on the turbine monitoring the pull-in tension, and an operator on the vessel viewing the load and logging the load values on a laptop using (data-logging) software or by logging directly into the client's

survey suite," Halford said. "The client rep on board can also be provided with another handheld to provide confidence that throughout the duration of the pull-in, the cable is not damaged or overloaded."

In some set-ups, the winch is not installed with a load pin and instead a telemetry shackle load cell is used in a rigging arrangement over the top of the turbine platform above a snatch block to monitor the load.

The TW-3.0-T display is unique in the fact that it has a math function that allows for custom trigonometric equations to be added by the client to compensate for any angle variations over a sheave and output a line tension figure when measuring just the resultant load.

**MORE INFO** [www.dlm-uk.com](http://www.dlm-uk.com)



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## CONSTRUCTION

### X1 Wind ready to install PivotBuoy prototype

Technology developer X1 Wind has laid its dynamic cable and is now ready for final installation of its floating wind prototype at the PLOCAN Test Site in the Canary Islands.

“The 20kV dynamic cable will allow us to fully validate the floater and wind-turbine performance, feeding the electricity to PLOCAN’s smart grid, as well as transmitting data through its fiber optic connection,” said Adrian Oliva, X1 Wind’s electrical engineering manager. “Also, we will be able to validate the cable’s dynamic behavior. Understanding how our TLP mooring system reduces motions and loads on the cable, compared to catenary systems, is crucial as it will reduce fatigue and potentially extend the lifetime of this critical component.”

X1 Wind’s team will wait for a suitable weather window to complete the towing and hook-up of the prototype.

X1 Wind’s technology is fitted with a turbine in a downwind configuration, enabling the structure to “weathervane” and orientate passively to maximize energy yields. It drives greater structural efficiency with a light and flexible design, which further supports future mass production at lower cost.

The platform uses a Tension Leg Platform (TLP) mooring system, which reduces the platform and cable dynamic motions, minimizes the footprint on the seabed, as well as allows its installation in deep waters.

“With the launch and implementation of X1 Wind X30 model, connected with our special dynamic cable, we finished another project for developing clean and sustainable energy,” said Rui Batista, Hengtong central Europe region sales director. “We are very pleased and proud to have participated in the realization of such a visionary project. Congratulations to the whole team and best wishes for success. We

look forward to participating in more new energy projects with X1 Wind.”

**MORE INFO** [www.x1wind.com](http://www.x1wind.com)

## CONSTRUCTION

### Palfinger equips French regions with offshore wind cranes

The need of renewables is increasing, and within the EU, France is spearheading the race to build offshore wind farms. For each of three current offshore wind projects in the north-western region of France, Palfinger is providing two of its PTM600 jetty cranes.

Palfinger Marine cranes are the perfect fit for jetty harbor site applications. Proven technology, a maintenance-friendly design and high-quality workmanship characterize these cranes. The compact design of the PTM crane model with an integrated power pack and oil tank allows space-saving installation on site, so that even small harbors can be used as loading sites. The reliable telescopic function of a PTM and its safety features complete the range. With a Palfinger PTM crane, the crew transfer vessel (CTV) can be easily and reliably loaded with everything that is needed to service the turbine.

The jetty cranes in La Turballe in the region of Pays de la Loire, and in Fécamp, in Normandy, are already prepared for operation. The cranes in Ouistreham, also in Normandy, which is the operation and maintenance harbor for the Calvados Offshore Wind Farm, are scheduled for delivery by the end of 2022. Additionally, Palfinger Marine is providing 64 PF14000-4.0 cranes for the offshore wind turbine platforms of the Calvados Offshore wind farm. The 450-MW Calvados offshore wind project consists of 64 wind turbines more than 10 kilometers from the Bessin coastline and covers a total surface area of around 45 square kilometers. The Palfinger fixed boom

service cranes support in-cargo and spare-parts loading from crew transfer vessels (CTV) to the transition piece.

“We are proud that we strengthened our footprint in the French offshore wind industry, since we entered the market only one and a half years ago,” said Iavor Martchev Markov, global sales manager wind at Palfinger. “This shows us that we can meet our clients’ needs all over the world – no matter the circumstances.”

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

## INNOVATION

### ematec to present new blade-lifting beam at WindEnergy

Ematec, a specialist supplier of lifting equipment for the wind industry, is using WindEnergy 2022 in Hamburg, September 17-30, for an extraordinary presentation (Hall A1, Stand 415). For the first time, ematec will show an offshore version of its innovative RBC-D rotor blade lifting beams and also will show visitors a world first with revolutionary potential: the new RBT-C50, an offshore lifting beam of a completely new dimension that can pitch rotor blades by 90 degrees before assembly.

“I am very proud that we can offer the trade two new developments for rotor blade assembly in the offshore sector at WindEnergy Hamburg; this is another milestone for us,” said Manfred Eberhard, CEO of ematec AG. “Up to now, we have mainly asserted ourselves onshore and established our yokes as benchmarks. But we also want to make rotor blade assembly and maintenance at sea as efficient and safe as possible. So, we have been working diligently. And in short: we can now also do offshore.”

With the RBC-D generation of yokes, ematec has revolutionized the assembly of rotor blades. The highlight: The cross beam can accommodate all blade shapes on the market without change-over times. This is made possible by

the automatic adaptive blade support, with which the crosshead automatically adapts to each rotor blade shape. That was previously only possible on land; now, it is available for rotor-blade assembly at sea. The RBC-D40 offshore can safely pick up and handle rotor blades of up to 40 metric tons — regardless of the blade shape. This makes the innovation predestined not only for initial assembly but also for the maintenance of offshore wind farms.

The second innovation for the offshore sector is still in the middle of development. The new yoke RBT-C50 combines the technological advantages from the RBC and RBT worlds and thus offers automatic adaptive blade support (RBC) on one hand and a pitch angle of 90 degrees (RBT) on the other.

“This means that our latest development definitely has the potential to revolutionize the assembly of offshore wind turbines,” Eberhard said.

Because on the vessels, rotor blades are usually transported standing up in their racks. On the other hand, a lying position of the blades is advantageous for single-blade assembly to keep the wind attack area and lost days due to wind as low as possible.

“Especially concerning cost efficiency, this is an issue when considering that a transport vessel can cost a six-figure sum per day,” Eberhard said.

To combine the advantages of an upright delivery of the blades with those of a horizontal assembly, the rotor blades have to be pitched 90 degrees before assembly.

“This is exactly what our latest development will be able to do,” Eberhard said.

At WindEnergy Hamburg, ematec will be presenting not only its innovations for the offshore sector but also, and above all, its successful RBC-D series for onshore assembly. The ematec technology is patent-pending, and wind-turbine manufacturer Enercon relies on yokes with automatic adaptive blade support. Enercon now has six RBC-D42 crossheads in use worldwide for rotor blades with blade weights of up to 42 metric tons. For heavier blades weighing up to 50 metric tons, Ener-



The automatic adaptive blade support of the RBC series yokes is a patent-pending technology. (Courtesy: Ingo Jensen/ematec)

con had also ordered eight RBC-D50 yokes; ematec has already delivered three of these to Enercon. The second round of orders recently followed with a further six RBC-D50 yokes.

“Our RBC-D yokes are extremely well-received on the market, as the

current orders show,” Eberhard said. “We manufacture at full speed at our production site in Memmingerberg. It confirms again that we have developed into a real specialist for lifting gear in the wind-power industry over the years.”

The logo for H.S.E. Safety Partners features a central globe with a white train passing through it. The globe is surrounded by stylized wind turbines and power lines. The text 'H.S.E. Safety Partners' is arranged in a circular pattern around the globe, with 'H.S.E.' in green and 'Safety Partners' in blue.

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GreenSpur Wind and Niron Magnetics collaborated on a rare-earth free generation solution for the offshore wind market. (Courtesy: GreenSpur Wind)

This year, the specialist supplier ematec is not only celebrating a host of innovations but also a double anniversary: 25 years of ematec and 10 years of expertise in the wind-power industry. In 2012, ematec AG entered the wind power industry with its first rotor blade traverse, the RBT 11.5.

“With our first development, we made a significant contribution to the international acceptance of single-blade assembly,” Eberhard said.

This was followed by the “bunny” version for safe bunny-ear mounting on gearless turbines. With the RBC series, ematec has set another benchmark in onshore single-blade mounting.

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

## ► INNOVATION

### GreenSpur, Niron develop rare-earth-free solution

GreenSpur Wind and Niron Magnetics announced a new rare-earth-free generation solution for the offshore wind market. The findings have been verified by ORE Catapult, a U.K.-technology innovation and research center for offshore renewable energy.

“Existing turbines use radial-flux generators, and the current designs are reliant on rare-earth magnets,” said Andrew Hine, commercial direc-

tor at GreenSpur Wind. “However, we employ a unique and highly innovative axial-flux architecture that makes the use of rare-earth free magnets possible.”

Past iterations of the GreenSpur generator had attracted interest, but there were concerns about its mass. Keeping generator mass within the same range as existing machines is important, as adding weight requires more structural support, which increases cost. By designing with Niron’s Generation 1 Clean Earth Magnet, which offers stronger magnetic performance than the ferrites used in its earlier generator designs, GreenSpur developed a new 15-MW generator. Based upon initial non-optimized results, the new generator delivers a significant 56-percent reduction in mass.

“Our Clean Earth Magnet technology helps eliminate reliance on expensive, supply-constrained, rare-earth-based magnets, without compromising on performance,” said Andy Blackburn, CEO of Niron Magnetics. “Device designers and manufacturers take our technology and realize its impact. By working with GreenSpur, we have been able to demonstrate what can be achieved with our Generation 1 technology in wind applications, with innovative materials and innovative device design coming together to enable a potentially transformative solution for the offshore market.”

Supported by an Innovate U.K. grant, the new 15-MW generator design was reviewed by ORE Catapult,

the U.K.’s leading technology innovation and research center for offshore renewable energy. The review confirmed that GreenSpur’s 15MW generator design is now able to meet the mass and efficiency targets required by the market.

“We have worked with GreenSpur in support of their hugely innovative and disruptive technology for several years,” said Tony Quinn, director of Technology Development at ORE Catapult. “Although there was interest in a rare-earth-free solution, there were concerns that their generator would be too heavy. However, with Niron’s novel rare-earth-free magnet, GreenSpur is able to show attractive mass and efficiency targets and a credible solution for consideration within a next generation turbine. We are now helping GreenSpur and Niron to present this opportunity to OEMs, developers, and strategic investors. The aim is to create an industry consortium with the right combination of players to bring this offering to market.”

“The risk that the rare-earth magnet supply chain poses to international offshore wind is existential,” Hine said. “For the first time, we have a path that takes this risk out of the equation.”

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

## ► INNOVATION

### First recyclable wind-turbine blades installed in Germany

Siemens Gamesa’s RecyclableBlades are generating electricity in the first commercial installation of fully recyclable wind turbine blades, at RWE’s Kaskasi offshore wind power project in Germany.

“We are proving that as the leaders of the offshore revolution; we are committed to making disruptive technology innovation commercially viable with the pace that the climate emergency demands,” said Marc Becker, Siemens Gamesa offshore business

unit CEO. “We’ve brought the Siemens Gamesa RecyclableBlade technology to market in only 10 months – from launch in September 2021 to installation at RWE’s Kaskasi project in July 2022.”

“This milestone marks a significant contribution to Siemens Gamesa’s target of having fully recyclable turbines by 2040; with RecyclableBlade available for our customers, we can create a virtuous circular economy,” Becker said.

Wind turbine blades are made up of a combination of materials embedded in resin to form a strong, stiff structure. Using Siemens Gamesa’s RecyclableBlade technology enables full reclaim of the blade’s components at the end of the product’s lifespan. Separating the resin, fiberglass, and wood, among others, is achieved through using a mild acid solution. The materials can then go into the circular economy, creating new products such as suitcases or flat-screen casings without the need to call on more raw resources.



Siemens Gamesa RecyclableBlades leave Hull for the Kaskasi offshore development. (Courtesy: Siemens Gamesa)

“That we are testing in our offshore wind farm Kaskasi the world’s first recyclable wind turbine blades under operational conditions is a significant step in advancing the sustainability of wind turbines to the next level,” said Sven Utermöhlen, RWE Renewables’

CEO Wind Offshore.

A number of turbines at RWE’s Kaskasi offshore wind farm will be equipped with handcrafted Siemens Gamesa B81 RecyclableBlades, each with a length of 81 meters. The project is 35 kilometers north of the island of

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Heligoland in the German North Sea. It will be comprised of 38 SG 8.0-167 DD wind turbines, generating 342 MW of clean, renewable energy for up to 400,000 German households.

“The first power being generated from the first turbine using RecyclableBlades also underscores the great value creation provided by Siemens Gamesa in several countries,” Becker said. “The RecyclableBlade technology was developed in Aalborg, Denmark; the blades were manufactured in Hull, U.K., and the nacelles were produced in and installed from Cuxhaven, Germany. RecyclableBlade technology will help reduce raw material extraction by creating the potential for secondary markets for the reclaimed material, with the job creation that this could provide as an additional benefit in local markets.”

The RecyclableBlade technology is also available for the 108-meter long B108 blades used on the SG 14-222 DD offshore wind turbine and the 115-meter long B115 blades SG 14-222 DD turbines.

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

## ► MAINTENANCE

### Belzona to exhibit at WindEnergy Hamburg

Together with the following authorized Belzona Distributors, Belzona Service Nord, SPIRAL, Perspect Benelux, AESSEAL Danmark, Belzona Portugal, Beltech Solutions A/S, Belzona is set to exhibit at WindEnergy Hamburg September 27-30.

Attended by designers, manufacturers, suppliers, financiers, operators, and service providers — both onshore and offshore — WindEnergy Hamburg is the world’s largest wind-energy exhibition. About 35,000 visitors from more than 100 countries will be in attendance, as well as 1,400 exhibitors from industry-leading organizations.

On stand B6.265, Hall 6, visitors will have the opportunity to talk to Belzona engineers about Belzona’s comprehensive range of repair composites and protective coatings for wind turbines.

This includes solutions for:

- Leading edge blades.
- Internal and external nacelles.
- Offshore splash zones.
- Transformers.
- Turbine bases.

In addition, live demonstrations of Belzona’s recently launched leading edge repair and protection solution, Belzona 5711 and Belzona 5721, will be held by Belzona Engineers on September 27-29 at 11 a.m. Optimized to be easy-to-apply, fast-curing, and hard-wearing, the combination of Belzona 5711 and Belzona 5721 offers asset owners a competitive solution for fortifying wind-turbine blades with outstanding long-term protection against leading edge erosion.

Also, Belzona will be hosting a networking event on September 29 from 4 to 6 p.m. where customers, journalists, and press officers are invited to discuss Belzona solutions for wind turbines with our engineers (drinks and snacks provided). The networking event is invitation only; if you would like to book a place, please contact Chloe Hirst at: [chirst@belzona.com](mailto:chirst@belzona.com)

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

## ► MAINTENANCE

### Ventus Group secures two ISO certifications

Ventus Engineering GmbH, supplier of end-to-end optimizing solutions for excellence in wind-turbine performance, has secured two international standard accreditations. Receiving ISO 9001:2015 certification for its quality management system and ISO 45001:2018 certification for its occupational health and safety (OH&S) management systems, Ventus has the

official seal of approval that its R&D processes, operational practices, and Ventus Academy are according to the same standards everywhere.

Following the world’s most recognized quality management system standard, ISO 9001:2015 provides customers with assurance they will receive consistent, quality products and services no matter where in the world their wind turbines are. ISO 9001:2015 contains a set of quality principles, which include customer focus, leadership, engagement of people, process approach, continual improvement, evidence-based decision making, and relationship management.

Alongside this, gaining ISO 45001:018 certification demonstrates that Ventus Group operates a best-practice Occupational Health and Safety Management System. This international standard focuses on occupational health and safety, with Ventus recognized as having the systems in place to reduce workplace risks, create safer and healthier working environments that meet all legal obligations, and setting targets to improve its OH&S performance further.

The international accreditations come at an exciting time for Ventus Group, as it continues to expand into new markets. Headquartered in Vienna, Austria, the company has dedicated teams working in multiple locations, both on and offshore. Building on its success in Europe and the U.K., Ventus is now also present in India, with plans for further expansion globally.

“We are extremely proud to have achieved these ISO certifications,” said Ventus Group CTO Poul-Anker Lübker. “But more importantly, the framework we have in place will enable us to expand Ventus Group faster without compromising on the quality provided in our services and products and OH&S and minimum always in line with the high standards in the wind industry.” “The timing is important, as the Ventus Group is experiencing a fast rate of growth geographically and is about to launch new products in the market,” he said. “Many of our clients operate globally, and we are

committed to follow them wherever their wind turbines are located. We therefore have already opened new entities worldwide, and we will continue to expand into new markets.”

“These globally-recognized certifications demonstrate our ongoing commitment to working to the highest quality standards, for our staff and our customers, regardless of where in the world we are delivering a product or a service,” Lübker said.

**MORE INFO** [www.ventus.group](http://www.ventus.group)

## ▀ MANUFACTURING

### Vestas to sell converters and controls business

Vestas continuously looks for partners that can support its strategic focus on its core business and help scale renewables efficiently in the long-term. To continue this development, Vestas has signed an agreement with KK Wind Solutions (KK) for the acquisition of Vestas’ converters and controls business, which includes Vestas’ three converters and control panels factories in Denmark, India, and China and associated staff functions. In total, about 600 Vestas employees are in scope for being part of KK.

As part of the agreement, KK will exclusively supply converters and control panels to Vestas from the three factories, while the agreement enables potential for local expansion and job growth by extending the use of converter technologies in areas adjacent to Vestas’ core business. Furthermore, the agreement between Vestas and KK includes joint development of converters with an engineering team at Vestas fully dedicated to the partnership. The agreement builds on years of collaboration between KK and Vestas, most recently exemplified by localization of offshore power conversion modules and low voltage cabinets in Taiwan.

“Across our global supply chain footprint, we are increasingly collaborat-

ing with partners to scale efficiently and build on the foundations we have established,” said Tommy Rahbek Nielsen, executive vice president and COO at Vestas. “This includes focusing our own resources to where they are most efficient and moving parts of our business to be run by other industry leaders who can create more value and secure additional long-term jobs. I’m therefore very excited about the agreement with our partner KK Wind Solutions, which can help grow and mature the wind energy supply chain.”

“As an established partner to Vestas, we aim to take a leading role in maturing the industry’s supply chain and accelerate the green-energy transition,” said Mauricio Quintana, chief executive officer, KK Wind Solutions. “The acquisition will bring immediate scale to our operations and extend our global footprint, while adding new competencies by welcoming over 600 highly skilled and experienced employees. As a result, we will be well-positioned to

develop and deliver world-class sustainable energy solutions to top tier wind OEMs and expand further into adjacent industries, such as Power-to-X.”

Vestas’ converter and control panel factory in Hammel, Denmark, employs about 280 people, and Vestas’ converter factory in Oragadam, India, employs about 50 people. In addition, Vestas owns a nacelle and hub assembly plant next to the converter factory in Oragadam, which will continue its operations. Vestas’ converter factory in China employs about 220 people and is part of Vestas’ manufacturing compound in Tianjin.

The transaction is expected to close in the first quarter of 2023, subject to receipt of approvals from the relevant regulatory authorities and separation of the converters and controls business, at which point the transaction will be reflected in Vestas’ financial accounts. ✈

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

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