

The boom in offshore

With offshore installations growing in size, scope and depth, the industry needs every advantage that new developments in technology can offer. The High Wind consortium is focusing on just this need. PES speaks to Johan Heiler about their latest innovation...





PES: Welcome to PES. Would you like to introduce the company and tell us a little about how you serve the wind industry?

Johan Heiler: High Wind develops new installation techniques to install offshore wind turbines at higher wind speeds. These techniques and tools are sold to the wind industry as a complete package, including design, construction, installation on the offshore cranes, certification of the new setup and training of the crane operators and lifting supervisors.

PES: And what are the particular needs of the offshore industry that demand a solution such as yours?

JH: The offshore wind industry is evolving rapidly. Turbine size is growing fast and wind parks are located further offshore in deeper water and in areas with higher wind speeds. Offshore installation vessels have been adapted to follow this trend: leg length has been increased and the vessels are able to work (sail, jack and operate) in increasing wave heights and currents. The offshore cranes and the offshore lifting operations however had seen very little improvement so far. Lifting is still done in very similar conditions as a couple of years ago. Some wind turbine manufacturers and their suppliers have developed lifting tools that allow some improvement but these have been mainly step changes. The Boom Lock which was developed by High Wind is the first giant leap.

PES: What sort of a response have you had from the industry thus far?

JH: The response has been very positive on all levels and from all stakeholders in the industry, which is not surprising as everyone could potentially benefit. As part of our “sales and marketing” effort we have presented our solution to the offshore contractors (on whose vessels this will have to be installed), to the wind turbine manufacturers (whose turbines will be installed using the Boom Lock) and to the developers and their underwriters. Everyone could see the benefits to the overall safety of the operations as well as to the overall cost of the installation. But for the Boom Lock to be successful all stakeholders need to come together and agree on how to share these benefits. The contracts for the installation of the wind parks which will be installed in the next two years are in most cases already in place. These contracts do not always foresee incentives for the use of the Boom Lock, which makes it unlikely that the contractor will invest in the tool if these contracts remain unchanged. Also, the turbine manufacturers need to take the abilities of our system into account in their installation procedures. Therefore, it is absolutely necessary that all parties come together and discuss how this can be addressed. Otherwise, it will probably take a couple of years before the sector can benefit from this improvement, which would really be a lost opportunity. Luckily we see some very

important players in the offshore industry who really see the potential and are helping us to create openings, even in existing contracts. We are optimistic that we will see more Boom Locks in operation by the end of next year.

PES: The company is actually a unique consortium of organisations. How does this work in practice and how does it benefit your overall goals?

JH: All companies involved in High Wind have a particular experience and role. The industrial partners (GeoSea, Sarens and SBE) all have technical knowledge in the field and vast operational experience in offshore operations and in lifting operations. PMV (the investment company of the Flemish Government) and GeoSea are the main financiers of High Wind. By bringing together all these parties, and by involving experienced subcontractors, we have been able to design, construct and test the tool to its limits. As a result of that we now have a fully functional Boom Lock installed on GeoSea’s Neptune.

PES: The Boom Lock is your key innovation. Can you explain how it was conceived and the benefits it delivers?

JH: GeoSea is obviously involved in many offshore operations and realised that limits to lifting operations are one of the main reasons for lost time (downtime). It quickly became clear that if High Wind could address this, it could have huge benefits on

efficiency and on costs of offshore operations. When we started with development of our solution we set clear goals for the final solution: it should allow us to control the load in all directions, it would need to work with all components and on all turbines, the impact on the (other) vessel capabilities should be as low as possible, the threshold for implementation and operation should be low and the existing experience and know how would have to be used maximally. The Boom Lock ticks all the boxes. The main feature is that the Boom Lock allows safe operations in wind speeds of 15 m/s (and above). The design limit is set at 20 m/s and during its trials we have indeed operated safely in such high wind speeds. Actually, we found that wind speed is of little importance anymore. Contrary to what many people believe, the benefits of the Boom Lock not only lie in the installation of blades. We have found that the installation of the nacelle is also safer and much more efficient as the Boom Lock will immediately stabilize any load. And also the fact that we have incredibly accurate instant information on the actual forces and loads is seen as a huge benefit by the crane operators and the installation crews. No more trial and error, everything is measured and monitored to the smallest detail. And most importantly, by minimizing weather downtime for lifting operations, the total project duration for turbine installation can be reduced with as much as 25%.

PES: What do you do to protect the IP of your products?

JH: Obviously we have patent protected our innovation but the real protection lies in keeping the know how in the company. Many can copy our patent information and can try to work around that. But not many combine the theoretical engineering capabilities with the operational experience in the same way as High Wind does. Our goal is to keep ahead of competition by looping back all operational feedback in our design and our solution. Furthermore, High Wind is as close to “open source” as you can get: we offer our solution to the entire industry at market conform conditions, thereby hopefully reducing the incentive to try to work around it.

PES: We note that High Wind also offers operational and technical support. How is this aspect of your business performing?

JH: High Wind will naturally involve the client, the crane operator and the end user during the design and installation phase of the Boom Lock so that everyone fully understands the potential and the limits of the tool. Using the device will however also require that people are trained and qualified. For that purpose, High Wind has

developed a highly realistic wind turbine installation simulator. All crane operators, lifting supervisors and installation crew can be trained on the simulator, and it can also be used to test and optimize complex lifting operations. And we don't stay behind our desks – High Wind also provides support offshore, and can assist in analysing the operations.

PES: Can you tell us about a project that you've been involved with recently?

JH: The Boom Lock was used on a maintenance project just after its commissioning and has just finished installing wind turbines at Kentish Flats Extension. This has proven to be an ideal first project for us. With GeoSea, Vattenfall and MHI Vestas the project has a really strong and experienced installation team that was willing to invest time and effort in

working with the Boom Lock, and project management that also sees the bigger picture, and understands the importance this technology could have for future projects. To minimise the impact of this new technology on the project High Wind provided training to the operators before the start, and we have been on board during each lift. Thanks to the direct feedback we have from the installation teams we have been able to continuously make small improvements to our system, and assist the installation team in optimising the operation. It is great to watch how quickly people adopt the new methods, and how fast they progress on the learning curve. As a result, we could see installation times lowering with every turbine. As far as we are concerned, it's actually a pity that the project was finished so quickly, as we are convinced we had not



reached the end of the learning curve yet. Working so closely with the industry's top professionals is also inspiring. We have gotten plenty of tips and pointers on how to further enhance our system, and we are working on several new ideas and features that will be implemented before the next project. We would have loved to install another 50 turbines on Kentish Flats!

PES: Where in the world are you doing business? Do you have plans to expand into other territories?

JH: Currently our focus is on Europe where most of the offshore wind action is. There is no particular reason why we should not offer our solution to American or Asian operators or projects but we believe that the stakeholders in the European theatre can be more easily convinced of the potential as most of them have experienced the cost of downtime and uncertainty in previous projects.

PES: How difficult has it been to launch a new concept and product to an already crowded industry?

JH: The problem for High Wind is not so much that the industry is crowded. We honestly believe that our solution is quite unique and that all experienced actors in the offshore wind industry understand this. As said, our main challenge is to get the parties to agree on benefit sharing mechanisms and to break open existing installation contracts to prevent our solution from being pushed backwards to projects which will only start in 2018 or later.

PES: And what aspect of the business gives you the most satisfaction right now?

JH: We believe that the Boom Lock can contribute in a significant way to lowering the cost of offshore wind, which is an absolute requirement for offshore wind to continue to be a valuable alternative to other energy sources.

PES: 2015 has been a big year for High Wind. What are your thoughts about the coming 12 months?

JH: We have many thoughts: on rolling out the Boom Lock and on developing other tools and variations to further improve specific parts of the installation process. 2015 has indeed been "big and busy" but we are confident that the coming years will be as big or bigger.■

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