

Next Ocean
Founded in 2016
Number of employees 3
www.nextocean.nl

Offshore Wind
innovators

A traffic light to cross safely

Start-up Next Ocean has developed a method to accurately predict, up to the minute, whether it is safe to cross from a boat to a platform and vice versa. The Wave Warning System increases safety and the number of working days. And the beauty of this solution is that the ship's own navigation radar can be used.

FOR WHAT PROBLEM HAVE YOU FOUND A SOLUTION?

"Waves behave unpredictably. Normally the captain and helmsman use statistics and probability calculations to warn if waves are too high to safely transfer the crew. The norm is that the probability of a dangerously high wave, twice as high as the operational limit, may not exceed 1:1000. While working offshore, the crew is still regularly surprised by a high wave, causing injuries by the unexpected movement of the ship: a heavily bruised hip, a pinched finger, a broken foot. Our system limits these risks. At the same time, statistics show that even in heavy weather, safe

'windows', - the time span in which the waves do not reach the danger limit- do occur. If you use that time optimally, the ship can be operated more effectively. "

WHAT'S THE CORE OF YOUR SOLUTION?

"A ship's radar constantly scans the area in search of the shore, other ships or obstacles. In fact, waves are noise. This noise is filtered. We are interested in those unfiltered signals, especially in the vicinity of the ship. The radar of a vessel that is busy with transferring operators to a wind turbine, does not have to scan the wide surroundings. Instead, it can scan short range. We do not take control over the system, we just listen to the raw radar signals. The radar registers the wave movements and our model calculates how those waves develop towards the ship's location. With known Response Amplitude Operators (RAO's) we calculate how the ship will respond; especially the heave and pitch movements are relevant. On the monitor you see the wave motion and a line indicates whether it falls within the safety margins. By linking a traffic light to this, the crew can easily see whether they can cross safely or not. "

WHAT IS SO GROUND BREAKING ABOUT YOUR SOLUTION?

"It is not true that a wave that is far away is still the same wave at the ship. High waves damp out, waves appear out of nowhere, every wave has its own speed and amplitude. Based on all underlying wave components, our model calculates how the situation will develop within two or three minutes. What is unique is that we have succeeded in developing a model that accurately and reliably predicts the behaviour of wave and ship movements, while using raw radar data. Plus that an existing navigation radar is sufficient for data collection. "



WHAT ARE THE BENEFITS OF YOUR SYSTEM?

“The most important for our customers is the increase in safety. We show them which waves are coming. We support the captain and the operators to make the decision to transfer or not; to reduce the indefinite feeling of ‘I do not trust, I’m not going to’.

In addition, the number of workable hours and availability of ships is increasing. Suppose that the transfer takes 1 minute and a 3-meter wave

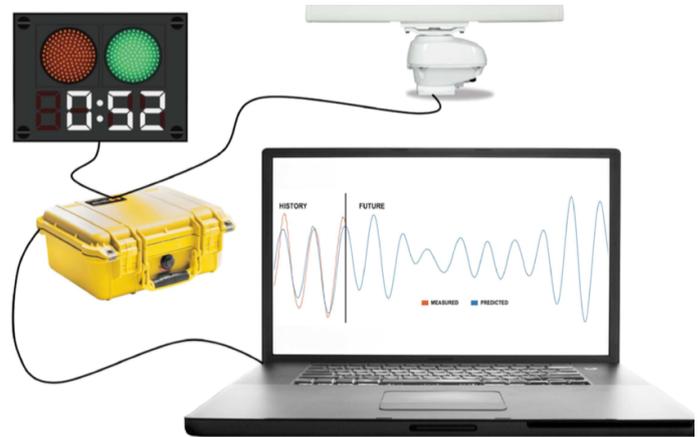


is the danger limit. According to the rules, if the waves are 1.5 meters there is a chance of 1:1000 of a 3-meter wave and you are not allowed to work. This while in 99% of the time - within a window of 1 minute or longer - the waves do not exceed 3 meters. When you, knowing that these workable windows can be predicted, extend the standard limits by 10% from 1.5 to 1.65 meters, up to 14 extra working days per year are possible on the North Sea. An attractive option for ships costing 5,000 - 1 million euros per day. Moreover, you can use our system in the dark, 24/7. Currently, a visual check in daylight is always required. So, even without raising the limits, you can suddenly double the deployment of some ships.

The fact that an ordinary ship radar is sufficient also saves considerable costs. A special radar is easily ten times as expensive as a standard navigation radar of 20,000 euros.”

WHERE ARE YOU NOW?

“We reached the end of the testing period. The first commercially available Wave Warning System is produced. We have sold it to cable laying company Allseas Engineering. We run five pilots on different ships and for different customers; not only in offshore wind, by the way. As soon as the final pilot is completed, we will evaluate. So far so good. “

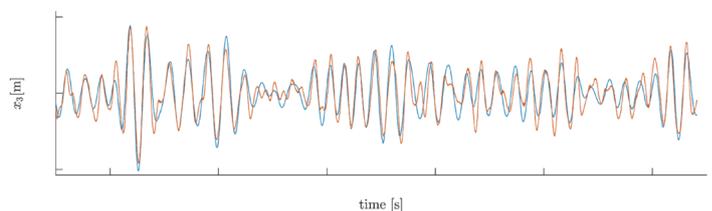


WHAT ARE THE CHALLENGES?

“The challenge is to build a good track record, to show that our system works in all conditions. We have a launching customer and financing is no problem either. There is a lot of interest of the industry, the pilots were forgiven in no time. There is quite a busy call. “

WHAT IS THE ADDED VALUE OF OFFSHORE WIND INNOVATORS?

“We were among the finalists of the Offshore Wind Innovation Award. This allowed us to present ourselves during the Q-meeting and the Offshore Seminar. Suchs platforms to explain our idea is great. It has certainly led to new and more intensive contacts. We notice that wave warning is getting more and more attention. In addition, we are now working with Martin Weissmann and two companies to see whether we can design two additional types of pilot projects. And at the next Innovation Award we will share our results with the sector, one year later.”



60[s] Predicted heave (blue) and measured heave (red)

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