Tech disruption in offshore wind

Think of a future where the offshore wind supply chain connects in real time. Picture a wind turbine technician installing, maintaining, and fixing components with the support of shore-side staff connected through their eyes and ears. The experts are supporting the technicians through every step of a critical job.

Envision the crew of a CTV conducting an underwater visual inspection of the foundation and transition piece, then automatically storing the video footage. It is seamlessly uploaded to the cloud then quickly reviewed by the manufacturer engineering team. These capabilities are a reality through IoT technology, and they are available now.

A downtime event can cost millions of dollars and last days, sometimes weeks, where the wind turbine is not operating. An expert might need to fly in from another country to fix the problem. Not only is this costly and time consuming, but it also leaves a carbon footprint: a roundtrip flight from Logan International Airport in Boston to Heathrow, London, for example, emits approximately 1.53 tonnes of carbon dioxide into the atmosphere.

Now, imagine a trained technician putting on a pair of glasses that allow an entire resource team to see what he or she sees, and they can assess the problem from wherever they are in the world and potentially fix the problem.

This is how V2 Subsea is planning to disrupt the usual way of business in wind energy.

Dustin Varnell is a master mariner and dynamic positioning operator certified by The Nautical Institute. He has been working on offshore projects for over twenty years. Varnell is the founder of V2 Subsea, a technology solutions provider based in Newport, Rhode Island in the U.S.

V2 Subsea is using video and media technology in a new and innovative way to empower the offshore wind industry. 'We are using video and data to complement enterprise systems like SMS (Safety Management Systems) and CMMS (Computerized Maintenance Management Systems). We see that this will significantly impact retaining knowledge and providing our customers with informed decision-making.'

Two years ago, Dustin began collaborating with a V2 Subsea partner organization called Blueye Robotics, a Norwegian company, to develop a solution that empowers ship's crew, engineers, and scientists to conduct underwater inspections. The Blueye underwater drones can inspect anything from the ocean floor to a ship's propeller.

'We are working with Blueye Robotics to develop a reliable solution where anyone with basic training and experience can conduct underwater visual inspections,' says Varnell. 'Our partnership with Blueye fits with our goal of providing the best-in-class equipment for video and data capture.' He continues.

This underwater robotic equipment is reliable, capable, and can operate down to 305 meters. The kit has already been used successfully on U.S. offshore wind farm sites for subsea inspection. Also, it is the fraction of the cost of a traditional work class ROV.


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V2 Subsea also offers a globally accessible media platform that allows companies to store and categorize media for training and/or assessment purposes. 'We design a customized and integrated program by use case for real-time communication and video data storage,' says Varnell. 'Our goal is to minimize the friction of video flow as a service.' He continues.

This solution takes video and data sharing and collaboration beyond tools like email and Dropbox by simplifying the workflow, while openly integrating with existing software solutions to provide a single centralized secure source for digital assets.

Not too long ago, Varnell met Thomas Lougborough, a strategic market developer for RealWear at Innovate Newport, a co-working space and entrepreneurial hub on Aquidneck Island, where they both live. RealWear's flagship product is the HMT-1®, a rugged, head-mounted, Android-class tablet computer.

Both Varnell and Lougborough saw an opportunity to implement the HMT-1® RealWear technology into remote inspections, where the operator could be streaming the video to an expert, thus creating a more efficient and cost-effective workflow for the industry.

'RealWear is a technology that empowers offshore workers to capture and transfer visual data while performing their job tasks,' says Varnell. 'You can capture photos while you work. You can record yourself performing certain tasks so they can be documented and stored for future reference.' He continues.

This, Varnell says, could save companies millions of dollars a year. 'RealWear connects the knowledge of subject matter experts so that they can advise and help workers in real-time. That is powerful and the industry is starting to see it.' Says Varnell.

He believes that the partnership between V2 Subsea and RealWear will ultimately drive down costs for the wind energy industry, which could help us achieve the eventual goal of carbon neutrality quicker.

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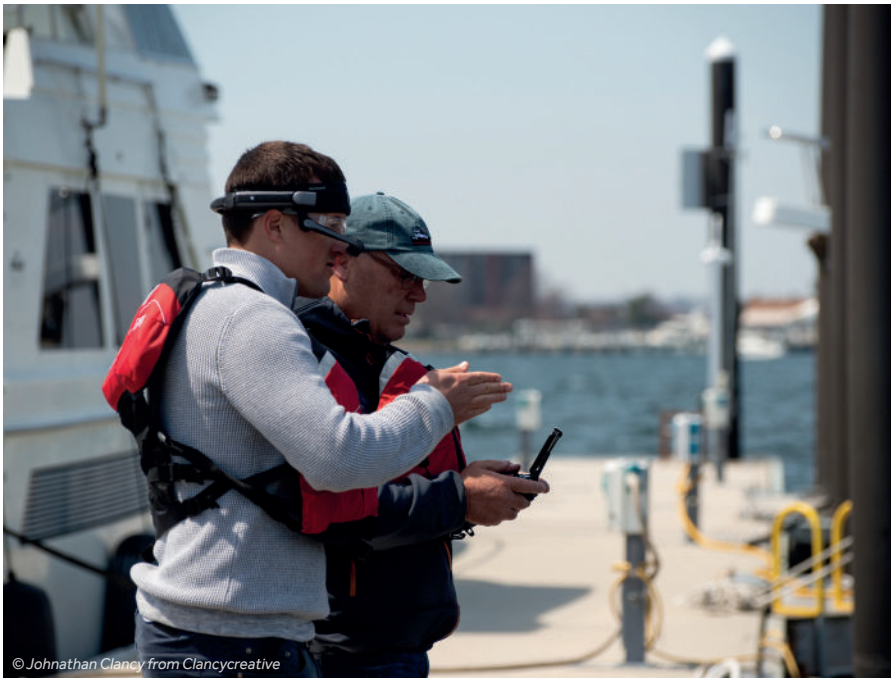
'There are companies that have ROVs, aerial drones, and visual data services. But I don't know of any other companies that are focusing on the connected worker solution and video data integration for offshore wind.' He continues.

Loughborough and Varnell's idea couldn't have better timing. The Biden Administration announced that they will half carbon emissions by 2030 and it is clear that wind energy is a major component to that goal with a plan to deploy 30 gigawatts of offshore wind power by that year. In President Biden's first week in office, he signed an Executive Order calling for the country to develop a clean energy economy with the expectation that it will create millions of jobs, and many of those jobs will be in the offshore wind industry.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For Loughborough, he believes that V2 Subsea, utilizing RealWear tech, can elevate Rhode Island's position as the East Coast hub for the Blue Economy.

'Our goal is to transfer the knowledge from European companies and engineers who have a vested interest in seeing the American wind farms be built efficiently by American citizens,' Lougborough says. He believes, through training in RealWear technology, a whole new workforce can build and maintain the infrastructure needed here in the U.S. with the guidance of experts overseas.

V2 Subsea and RealWear are working with a local Rhode Island company, Gorilla Rigging, to build a connected IoT service center headquarters for their joint operations.

Gorilla Rigging has been one of the primary textile rigging companies in Rhode Island for decades, providing equipment and services to high performance racing teams and companies with industrial rope access needs around the world.


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Gorilla Rigging's owner, Jim Stone Jr., saw an opportunity when Lougborough approached him about joining forces to pivot towards the wind energy market, after all, rigging will be an essential part of the nascent wind energy industry.

Loughborough says that Varnell's expertise in underwater ROVs and media management along with Gorilla Rigging's established presence in the Rhode Island marine industry will position them as the go-to experts for training in RealWear and ROV inspections, as well as media and tech management.

However, Lougborough and Varnell's vision for the future requires a software integration strategy. SimplyVideo is one of the software vendors in the RealWear partner network that specializes in low bandwidth communication and integration to other more commonly used platforms such as Teams or Google Meet.

In January, Loughborough met George Sims, the Chief Strategy Officer at SimpyVideo, a video platform company in the UK. Loughborough connected the software company with V2 Subsea and they are working together on several international maritime projects that include IoT-connected solutions above and below the waterline. The two companies have found synergy in their capabilities and overlap in their customer-first focus.

SimplyVideo is a software platform that provides better video meetings and offers the option to add immersive communication tools to your existing meeting. It can connect the RealWear HMT-1) and other augmented reality platforms to programs like Microsoft Teams or Google Meet, even at low bandwidths.

This means video streaming from an offshore wind turbine into an office in a city becomes a whole lot easier and can create a more immersive experience for training or problem-solving purposes.

'I suppose the strategy behind SimplyVideo when we started was to make video calling and communication more than just heads and shoulders in boxes.' says Sims.

SimplyVideo allows multiple camera angles to be viewed simultaneously, creating an almost in-person experience for the viewer. 'We wanted to bring in more views into video calls so people could triage problems and fix them quickly,' Sims says. 'It's game changing technology.' He continues.

When used in the offshore wind industry the platform improves situational awareness for technicians and remote mentors which ultimately reduces the health and safety risks and improves work methods.

SimplyVideo successfully used the platform to revolutionize a rehearsal of concept (ROC) drill for the Ørsted Hornsea 2 project. They now look to the U.S. market with V2 Subsea to revolutionize offshore wind construction and O&M through remote mentoring. With 5G networks expanding, even to offshore wind farms, Sims sees live streaming video from oceans to offices as the future.

'Because we are at the beginning stages of renewable energy in the northeast, we are at what I like to call the discovery phase,' says Loughborough, which means that there is plenty of room for innovation and disruption.

With the Blue Economy expanding along the Northeastern Seaboard in the U.S., and the need for training and infrastructure increases, it looks like these entrepreneurs will have plenty of work coming their way.

The V2 Subsea + Gorilla Rigging jointly operated IoT service hub will open in the summer of 2021 and will be up and running to support the first U.S. full-scale offshore wind farm. The facility will be in the heart of the U.S. offshore wind energy corridor located on Rhode Island's Narragansett Bay.

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