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Dynamic Load Monitoring (DLM), of Southampton, UK, has manufactured two bespoke monitoring systems that have been installed by dive teams on subsea bend stiffeners at an offshore wind farm. The equipment has been commissioned, with the first round of data due to be collected in March 2021.

The bespoke products were delivered to Darlington, UK-based Subsea Innovation, a manufacturer of subsea equipment, which was challenged by the end user to provide a system to prevent array cables—they connect the site’s turbines together—from breaking. Subsea Innovation’s Dynamic Bend Stiffener (DBS) is a retrofit assembly that is installed onto turbine cables of an offshore wind farm, which are subject to tidal loads that have been causing the power cables to prematurely fail or reduce in efficiency.

Subsea asked DLM to devise a method to monitor forces on the cables and the movement they experience over time; log the data over the course of a year; and make it periodically accessible. The system comprises three dual axis shear pin load cells, two accelerometers, and a programmable logic controller (PLC). The shear pin load cells are dual axis shear pins that measure forces across two planes in the positive and negative directions. The working load limit (WLL) of each plane is 50kN, in both the positive and negative direction.

Mike Brend, project manager at Subsea Innovation, said: “The DBSs connect directly to the turbine bell mouth and encapsulate the cable at the J-Tube exit, and restrain the cable at the point of failure. The cables are exposed to undesirable bending without a DBS and beyond the expected MBR [minimum bending radius], hence the solution is required to combat such occurrences.”



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