

JF Renewables provides offshore structural monitoring solution

Subcontracted by Norwegian Geotechnical Institute (NGI), James Fisher Marine Services* performed a successful sensory installation for a prototype suction bucket jacket foundation.

Designed to replicate the innovative suction bucket foundation reaping huge operational success in the offshore oil and gas market, this model structure will be equipped with state-of-the-art sensory equipment to monitor its ability to overcome some of the key challenges offshore wind farms will face in years to come. The conclusive evidence from the evaluation will determine the replica's suitability for utilisation in the offshore wind industry.

The challenges

- NGI – an international geotechnical consultant for the offshore industry – required an offshore structural monitoring solution for the suction bucket jacket foundation replica to help the offshore wind industry determine how to overcome future challenges.
- The customer required a subcontractor able to provide an innovative sensory solution suitable for operation in the offshore environment. The sensor will demonstrate the structure's ability to reduce operational costs for the future of the industry, which can in turn support the offshore renewables industry's initiative to alleviate costs of the Megawatt Hour (MwH).

The solution

- Working in partnership with NGI, the team fitted 126 sensors from the foundation structure's turbine tower and foundations to below the water and mud line in order to monitor activity across a variety of critical areas.
- The sensor installation was conducted using a mechanical protection method developed by NGI, which featured a comprehensive SEM system and an exclusive long-term monitoring scheme; an underwater instrumentation product not currently available elsewhere in the offshore wind market.
- The construction of the instrumentation work was primarily assembled by Strainstall and NGI at Bladt Industries, Aalborg, in Denmark to ensure an efficient build was conducted in a safe working environment.

The results and benefits

- The final construction phase of the instrumentation work was successfully completed offshore at Borkum Riffgrund in German waters of the North Sea, where the monitoring solution was required.
- The conclusive evidence from the monitoring solution enabled top industry operators to pinpoint areas where some of the key challenges facing the future of offshore wind farms can be overcome.
- The insight provided by the monitoring system will help the OWA project partners to evaluate whether this new concept can be utilised throughout the offshore wind industry.
- On project completion, the structural monitoring solution demonstrated the structure's ability to provide a cost-effective solution to support the offshore renewable industry's initiative for the MwH.

* A James Fisher Renewables legacy brand