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Risk management

Human error still key factor

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New technology, new opportunity

Ursula O'Donnell, at the Standard Club, takes a look at floating offshore wind energy and sees new opportunities for marine contractors

Floating offshore wind is an emerging energy technology which will benefit wind farm developers by opening up new markets to exploit energy resources in deep water areas far from shore as well as governments under pressure to meet renewable energy targets. It should also provide marine contractors involved in the offshore oil/gas industry with exciting opportunities to diversify, since there are synergies between floating offshore wind and more established energy technologies.

While traditional fixed-bottom wind farms are expected to continue to dominate the market up to 2030, as wind turbines become larger and more powerful, the next few years will be important in terms of the development of offshore floating wind technology on a commercial scale. Many countries have begun to explore the potential for developing this technology, in particular, Japan, Norway, France, Portugal, the UK and the US.

How are they different to traditional wind farms?

Traditional offshore wind farms which are fixed to the seabed by monopile or jacket foundations are restricted to water depths of less than 50 m, whereas around 80 per cent of offshore wind capability in Europe is located in deeper waters (ie more than 60 m) which is often further from shore. Wind energy tends to be more dispersed near shore whereas it is more powerful a few miles out to sea and therefore capable of generating more potential electricity.

During construction of traditional fixed bottom wind turbines, the component parts (ie the foundations, tower sections, nacelles, generators and turbine blades) are usually transported and assembled out at sea on special heavy-lift/jack-up crane barges. These vessels can jack-up out of the water to provide a stable platform to carry out the lifting and installation of these components. By contrast, some of the floating offshore wind turbines currently being developed can be constructed at a port and towed to the wind farm site using tugs as opposed to having to utilise expensive heavy-lift vessels. It may also be easier and less expensive to carry out maintenance operations on them since they can be towed to a port for repairs.

New floating offshore wind concepts

The three main concepts for floating wind foundations are a spar buoy; a semi-submersible platform and a tension leg platform, which have all been used extensively in the marine oil/gas industry. There are in fact several technology synergies with the oil/gas industry, which initially accessed oil reserves in shallow waters using fixed bottom structures before developing floating structures in order to access oil/gas reserves in deeper waters further offshore.

Hywind Scotland developed by Equinor (the Norwegian energy company formerly known as Statoil) is the world's first commercial floating wind farm. It is located 15 miles off the coast of Scotland and started production in October 2017. It consists of five floating turbines which are each installed on top of a ballasted cylindrical spar structure which are moored by cables to the seabed. The produced electricity is transported via an export cable to an onshore substation. To give an idea of its scale, each of the turbines are 253 m in height (of which 78 m are below the sea surface). At its maximum capacity, it is expected to generate enough power for 20,000 households. Although this is a modest amount, it was developed with the aim of demonstrating the feasibility of commercial floating wind energy.

> **"Industry bodies have noted that floating wind power could be as cost effective as fixed-bottom wind turbines by the mid-2020s if adequate support is provided by government"**

There are several other floating wind prototypes but the most developed projects (which include Principle Power's Windfloat and Ideol's Floatgen) still need to demonstrate their technical and commercial viability. Industry bodies have noted that floating wind power could be as cost effective as fixed-bottom wind turbines by the mid-2020s if adequate support is provided by government.

Insurance arrangements

Marine contractors will typically be reliant on a combination of construction all risks (CAR) insurance cover placed in the


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commercial market and P&I insurance which can be placed in the commercial market or with an International Group (IG) P&I Club. The CAR policy, which is typically on WELCAR 2001 terms, responds to loss of or damage to the wind turbine components during their fabrication, construction, transportation to the wind farm site and subsequent installation. The wind farm developer will usually purchase a CAR policy and arrange for their contractors and subcontractors including those working offshore to have access to it, but this can vary.

IG consists of 13 independent mutual insurance associations which between them provide P&I liability cover for around 90 per cent of the world's ocean-going tonnage. The cover responds to shipowners' and charterers' third-party liabilities for death/personal injury, cargo loss and damage, pollution, wreck removal, collision and damage to property which arises from the operation of ships. A central feature of mutual P&I cover is that there is a collective reinsurance programme which enables the associations to provide very high limits of cover (up to a limit of around US$7.75 billion).

Windfarm installation and maintenance operations are considered too specialised and fundamentally different from those arising out of mainstream shipping to have access to full mutual P&I cover. This means that legal liabilities arising during and as a consequence of these "specialist operations" are excluded, eg while the ship is installing the wind turbines or carrying out repairs on them. However, reinstatement of cover can be provided, by eg The Standard Club, up to an agreed limit (which is reinsured outside of the IG arrangement) known as the "specialist operations extension" which will respond to P&I liabilities while the ship is performing wind farm installation or maintenance operations. This does not reinstate cover for loss of or damage to the "contract work" which encompasses any property which is destined to become part of the completed wind farm project. This is because the specialist operations extension is designed to dovetail with the CAR policy discussed above.

Marine contractors involved in offshore wind farm development will commonly have liabilities imposed on them under their contract with the wind farm developer (or one of its contractors) that go beyond those that would apply under applicable law. It will also have a contractual obligation to have insurance in place to cover these exposures as well as any potential third-party liabilities. Mutual P&I insurance will cover certain of these risks while performing specialist operations eg oil pollution emanating from the ship or the wreck removal of the ship or injury to personnel on board, since these risks are common to all shipping. But as mentioned above, a specialist operations extension will be required to respond to claims that arise as a result of the specialist nature of the work.

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However, liabilities which arise from failure to perform the work, fitness for purpose of the work or the substandard quality of the work are not covered under this extension (or mutual P&I cover), since they are commercial risks. A "contractual extension" cover would also be needed to respond to P&I liabilities that the marine contractor has assumed under contract which applies when the ship is not performing a specialist operation.

Conclusion

Floating wind energy is a positive prospect for marine contractors especially since the oil/gas industry has started to decline. However, the technology will first need to be improved to drive down costs and deliver the economies of scale needed to implement it on a commercial scale. It will present some challenges as floating wind systems located far from shore are likely to experience harsh weather conditions which may damage the wind turbines or at least affect their productivity. Marine contractors, their brokers and insurers will undoubtedly respond to these new challenges and the ever-changing contractual risk allocation, as they have already proven to do since offshore wind energy was first developed. *MRI*


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