Sharing marine maintenance costs within new market spaces

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Although there have been power cables in the marine environment for many decades, there have been relatively few in number until fairly recently. Those that exist are predominately national or short haul international cables and in terms of total kilometres are rather limited.

Certainly this is the case when compared with telecoms cables, which have traditionally numbered hundreds of thousands of kilometres laid on the sea bed. As a result, the repair of power cables has very much been a niche market revolving around securing and mobilising VOOs (vessels of opportunity) or framework agreements, the latter mostly with the original cable installer/manufacturer and their specialist repair assets.

The financing of these repairs has always rested with the insurance industry, which because of the relative limited number of cables and faults, has been a model that has proved suitable for the majority of parties. However, with increasing awareness of climate change and the subsequent desire for more renewable and cleaner power sources, there has been a big push (particularly in the European region) for the development of large amounts of offshore wind capacity. This has led to a significant increase in power cable sea bed kilometres to service and connect wind farms to their respective national grids. In the European region specifically, there has also been an increase in the number of international links, to more effectively harness and transmit electricity around the various power markets.

The upshot is an increased risk profile for power cables, and correspondingly more faults, whether from manufacturing or from third party aggression. As a consequence, there has been a marked increase in the number of insurance claims.

The increased cost of liability has led insurers and some national/regional government bodies to look at ways of reducing costs and strengthening the supply chain. A further aim is to enable a more rapid and streamlined response times - insurance-based repair models normally incur a significant delay (months) between the fault occurring and a repair being undertaken.

Power cable repair costs are frequently in the multiple millions. This level of expenditure is understandable as such projects necessitate the diversion of a dedicated specialist installation vessel from its existing activities and more often than not, sail it from a distant global location. Additionally, depending on the installation

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equipment already mobilised on board, it may be necessary to have a period of reconfiguration prior to commencing the power cable repair. Alternatively, the deployment of a VOO means having to locate and mobilise all the specialist equipment, such as chutes, tensioners, compatible jointers and jointing equipment (as well as some form of cable storage arrangement), prior to sailing.

Correspondingly, everything has to be totally demobbed after the operation, with these activities requiring the cable owner or insurer to cover the cost of the VOO while this takes place, which could cost anywhere between £65,000 and £150,000 per day. Assuming a seven-day mobilisation/configuration, and corresponding demobilisation, the pre- and post-operational activities can cost anywhere from £0.91 million to £2.1 million, even before sailing to the fault site and undertaking any survey/inspection or repair activity.

These costs do not even consider the cost of service interruption; this was calculated for a 300MW UK wind farm in November 2014 by Transmission Investments LLP to be in the region of £3 million to £12 million per month depending on the number of export cables available for transmission back to the grid. In this instance, the higher figure is where there is only one export cable servicing the wind farm, while the lower figure represents two cables.

Traditionally, telecom agreements (in particular maintenance zones), have a vessel or vessels on standby close to the specific regions known to have high fault rates, and are usually able to sail for cable repair within 24/36 hours of being called out. It is this preparation, localisation and cost effectiveness that the UK's OFGEM, along with the support of some of the larger UK's OFTO's (Offshore Transmission Operators), wishes to replicate for all the UK's offshore wind farm export cables, national links and inter-connectors.

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Since the telecoms boom in the late 1990s and early 2000s resulted in the oversupply of vessels, the price that the industry is willing to pay for maintaining telecoms cables has in real terms either remained the same or decreased markedly in the majority of regions. This has led to a significant reduction in replacement tonnage and the rapid ageing of the world's telecom installation and maintenance fleet.

However, by integrating the maintenance of power cables with telecom cable, there is a great opportunity to share assets and the related cost base while allowing vessel owners to increase profitability and hence generate sufficient return on their investment to convert or build new dual-use tonnage.

This would allow power cable owners to see a reduction in their repair costs, while telecoms cable owners would secure enhanced tonnage with the benefit of DP2 becoming the standard. This enhancement would allow for easier servicing of existing telecoms cables where they are in close proximity to offshore renewables infrastructure, wherever it may be. In fact, there was a recent attempt by a local utility company on the west coast of the USA to place two inter tidal turbines within 170 and 238m of a high speed trans-pacific telecommunications cable. Had this occurred, it would have presented a far more complex repair than is normally contracted for.

The European coasts of the Netherlands,

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Denmark and Germany also present future challenges, specifically where national/local legislators have sometimes ignored lessons learnt in the UK submarine sector relating to cable recovery and vessel safety. This particularly relates to when operational submarine cables are surrounded by or in close proximity to wind turbines, wave generators or inter tidal turbines.

Another big beneficiary often overlooked would be the insurance industry, which would be able to confidently underwrite a range of cable failure mechanisms with a greater certainty of the likely repair cost risk. This should ultimately lead to lower premiums and reduced O&M costs for offshore power asset owners, thus making the industry more stable and attractive to a predominately risk-averse investor class – and will ultimately benefit the energy consumer with lower electricity bills.

Of course, there are some inherent differences in the products used and procedures deployed between maintenance contracts for telecoms and power cables. For a start, power cables are some five times larger in diameter and around 10 times heavier than traditional telecoms cables, which obviously necessitates different handling and equipment characteristics; everything needs to be bigger and stronger for power cables. They are also much more sensitive to crush (side wall pressure), when being moved and therefore traditionally require cable tensioners with moulded trackways over standard wheel pairs and cable drums conventionally used in telecoms. The physicality of power cable means the vessel chosen needs to be of sufficient size to safely handle and accommodate both the cable and associated jointing arrangements.

Among the telecoms vessels that can operate in both markets and already boasts an impressive track record is Global Marine's C.S. Sovereign. The capability to mobilise from telecoms to power mode, in combination with skilled staff, provides a capable platform to take this experience to; and meet market demands.

Global Marine is also undertaking a feasibility study to convert one of its maintenance telecoms vessels to enable it to undertake both power and telecoms repairs within the standard telecommunications mobilisation times of 24/36 hours. This along with the provision of a readily available pool of qualified power jointers (similar to the industry standard within the marine telecoms market) would be a world's first. Additionally, the company is also looking to develop a universal (range) type joint to make connecting different power cables easier, in particular

without the need for cable jointing technology from specific manufacturers.

The convergence of resources and skills allows the offshore renewable market to maximise on the years of experience built from the telecoms market. In the case of Global Marine, the company's portfolio includes an installed subsea cable base of over 300,000km, which equates to 22% of the world's total. Global Marine has also performed 33% of all maintenance operations on the world's fibre optic cables.

With these facts in mind, there are clearly many cost and availability advantages to both power and telecom asset owners in repair convergence. However, to release maximum benefits, owners and regulators need to consider the challenges and difficulties of operating in a marine environment and not attempt to apply shore-based frameworks to a very different operational plane.

It is also evident that dual market operation will help create a more stable and sustainable supply chain, in particular related to skill availability and future asset replacement. Moreover, there is a real opportunity for a reduction in the power asset owner's insurance costs, which would ultimately benefit energy consumers. ■

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About Global Marine Systems

Global Marine Systems Limited, is a leading provider of engineering and underwater services, responding to the subsea cable installation, maintenance and burial requirements of its customers around the world.

With a fleet of vessels and specialised subsea trenching and burial equipment, the company has a 165-year legacy in deep and shallow water cable operations. Global Marine's primary markets are oil & gas, renewable energy & power, telecommunications and deep sea research.

Global Marine holds the RoSPA Order of Distinction in recognition of 17 consecutive years of outstanding occupational health and safety results.

Global Marine has two longstanding joint ventures in China, S.B. Submarine Systems and Huawei Marine Networks, and in February 2016 acquired a majority interest in offshore renewables specialist CWind.

About HC2 Holdings, Inc.

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HC2 has a diverse array of operating subsidiaries across seven reportable segments, including Manufacturing, Marine Services, Utilities, Telecommunications, Life Sciences, Insurance and Other.

HC2's largest operating subsidiaries include DBM Global Inc., a leading structural steel fabricator and erector in the United States and Global Marine Systems Limited, a leading provider of engineering and underwater services on submarine cables.

Founded in 1994, HC2 is headquartered in New York.

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