

Rising Long-Term Demand for Offshore Wind Vessels Impacts Industry

Rising oil prices and a growing interest in renewable energy sources is creating the perfect climate for increased interest in ultra deep sea offshore wind farms. Major investments by governments as well as oil and gas production companies are being made, which is having a big impact on the demand for offshore wind turbine vessels.

As a result, availability of offshore vessels for several types of ship types – survey vessels, jack-up platforms, installation vessels, transport vessels, accommodation vessels, supply vessels, cable laying vessels, and dredging vessels, not to mention maintenance, service, and repair vessels – as well as skilled maritime workers and shipbuilders is predicted to be in short supply – perhaps not in the short term, but definitely in the coming decades. Can the industry respond in a timely fashion by providing the necessary bespoke vessels for helping the wind industry meet its goals?

Current Fleet and Projected Requirements for Offshore Wind Vessels

Current specialist offshore wind vessels are few and far between, especially in Europe where the most rapid development is currently taking place. European countries have increased their requirements for offshore wind development substantially. This is due in due to the ambitious goals of the renewable energy sector for the next 15+ years. Here are the latest figures from the European Wind Energy Association (EWEA):ⁱ

- 1,371 turbines with 3.9 GW of capacity are on stream throughout Europe (at the end of 2011).
- 18 projects with a scheduled capacity of 9 GW are in progress in various European countries.
- Projects that will produce 18 additional GW of capacity are already approved in 12 different European countries.

In order to service this increasing number of offshore farms, more vessels will be required. Yet currently there are only 12 specialist installation vessels in use in European offshore wind turbine projects, in addition to a larger number of jack-up

barges. Between 2012 and 2013, an additional 10 vessels are scheduled to be delivered, all of which will be capable of dealing with larger monopiles and turbines, with the ability to operate in waters of 45 meters or deeper.ⁱⁱ

More vessels are clearly needed. The EWEA has estimated that an additional 12 installation vessels will be required in order to meet the total 40 GW of capacity scheduled to be delivered by 2020 throughout Europe.ⁱⁱⁱ Several factors have conspired to create a supply and demand problem in the deep offshore wind farm vessel sector in both the mid-term and long-term.



Certainly increased competition from the oil and gas sector for deep water vessels is having an impact. Additionally, the industry expects to see tonnage shortages in the production of jack-up installation vessels, supply vessels, tugs, and barges if bunching of project starts continues.

Financing for these projects can also be a challenge as banks generally only want to provide funds for long term work agreements. Typically, investments in supply chain components such as vessels in the wind industry require more than 10 years to generate an adequate return. As a result, investors are looking for a clear picture of the offshore wind market to at least 2025 – steady growth in particular.^{iv}

Here the interrelationship of cost and market size are acutely felt. Industry is hesitant to invest if there is no clear sense of market sustainability and viability. However, the costs of offshore wind will not come down if the industry does not invest in new technologies, including large scale vessels and other specialized equipment. As a result, cost reductions are likely only to be achieved when the industry uses their experience to develop solid technologies that will provide returns through a growing market.

The good news is that due to a short term surplus of supply because of investment decisions already made, a significant portion of this fleet should be delivered ahead of growth in installation volumes from 2015 forward. However, through the remainder of the decade, increased pressure within the industry and from sectors like oil and gas may squeeze the industry, especially if no further new investments are seen in the near future. As a result, additional investments will be required to provide market confidence, drive down prices, and spur development.

The situation in the US is quite a bit different. For starters, most of the installation vessels in current use in the offshore wind industry worldwide are owned by European companies, which creates unique problems for the US offshore wind market.^v Not only that, but at present, the technology required to construct the purpose-built, specialized vessels needed for cost-effective installation of offshore wind turbines does not exist in the US. These two concerns are further complicated by the fact that the Jones Act and other similar regulations prohibit the operation of European vessels in US waters.^{vi} This means America must come up with their own designs and production systems in order to meet the demand that is sure to grow in their country.

Analysis of the US market for offshore wind turbine vessels has shown a market ripe for investment. Douglas-Westwood has concluded that there will likely be increased demand for a variety vessels, including seismic, cable lay, environmental assessment vessels, tugs, jack-ups, barges, heavy lift, offshore construction, offshore supply, personnel transfer vessels, maintenance vessels, as well as purpose-built turbine installation vessels.^{vii}

Bespoke Offshore Wind Vessel Designs Need Time for Development

The specialized nature of the offshore wind vessels required for deep water, distant installations is a complicating factor for the shipbuilding industry. As IHC Merwede has noted, wind farm projects are becoming ever larger and deeper, which means the need for larger turbines, larger towers, and larger foundations increases the need for extremely large vessels. Greater depths and longer distances from shore further confound supply challenges. Additionally, as the industry shifts from monopiles to jackets, the types of vessels and functionality requirements change.^{viii}

In fact, purpose-built rather than generalist vessels is becoming the norm as developers realize the cost and time savings that can be achieved from specialist ships. Up to this point, many of the components for offshore wind installations have been installed and managed by oil and gas vessels. But these will prove to be inadequate over the long run, especially given the increased demand for offshore vessels by the oil and gas industry.

As a result, companies working in the space must strategically develop, design, and build their ships in order to accommodate an evolving industry. To meet demand, alliances and long term relationships between developers and vessel owners is becoming increasingly common.

Additionally, in order to overcome supply challenges, some developers are resorting to different strategies to secure vessel supply. For instance, DONG and Siemens have both purchased shares in A2SEA. RWE and Fred Olsen, on the other hand, are building installation vessels themselves.^{ix} These strategies will provide better access to vessels which ultimately will help to bring down the costs of installed offshore wind for the US market for such companies. Those who are not able to place orders

in time and cannot secure their own vessel supplies may suffer as a result.



Strategic Designs and Investments Needed to Meet Offshore Wind Vessel Demand

As it can take between 7 and 10 years to develop, approve, and construct an offshore wind farm, investments in the supply chain for supporting equipment such as vessels needs to be made now (sooner would have been better). The designs chosen should be specialist enough to speed installation and meet maintenance requirements, but flexible

enough to meet the needs of the offshore wind sector of the future in order to satisfy investors.

Experts in the field are recommending that, though supply isn't an issue now, it will be if investment levels remain flat. As such, should developers secure orders for vessels well ahead of time. Philippe Schönefeld, managing director of German Renewables Shipbrokers commented, "We advise clients to secure the charter vessels they need two or even three years in advance."^x This is all the more true for extremely specialized equipment and ships.

Things are a little different across the pond. In the US where there is a need to create a specialized offshore wind vessel industry, strong support from government for the development of integrated manufacturing, installation, transport, and maintenance strategies that lead to the manufacture of specialized vessels and other necessary components will be required. This will help to speed the development of offshore wind in that country. Additionally, adjustments to regulations for operation of foreign vessels may also assist the development of the industry.

Images via [German Renewables Shipbrokers](#) and [IHC Merwede](#)

Maryruth Belsey Priebe



A student of all things green, Maryruth has a special interest in cleantech and green buildings. In recent years, Maryruth has worked as the senior editor of The Green Economy magazine, is a regular blogger for several green business ventures, and has contributed to the editorial content of not one, but two eco-living websites: www.ecolife.com and www.GreenYour.com. You can learn more about Maryruth's work by visiting her site, www.jadecreative.com.

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IQPC GmbH | Friedrichstr. 94 | D-10117 Berlin, Germany

t: +49 (0) 30 2091 3330 | f: +49 (0) 30 2091 3263 | e: eg@iqpc.de | w: www.iqpc.de

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