THE SMARTER WAY TO WORK

BACKGROUND

Offshore wind farms have developed over the last 15 years from small demonstration wind turbines close to shore into much larger commercial operations.

Projects are now being planned with sizes greater than the largest nuclear power station, but with the added complication of being further offshore in environments that are only accessible for limited periods of time, either by boat or helicopter. The scale of projects, distance from shore and also the nature of metocean conditions are expected to become more challenging as projects develop.

Although any maintenance strategy for an offshore wind farm will prioritise safety and thus aim to reduce the required access to a wind farm, current levels of turbine reliability mean that frequent access is essential.

The number of turbines within some of the planned projects will create an almost overwhelming maintenance burden, which, with current access methods, will be virtually impossible to achieve.

In most cases, the access system for an offshore wind farm is reliant on port use, spare parts delivery regimes and contingencies, storage facilities at the port, and maintenance facilities on the quayside or elsewhere.

The Offshore Access System provides a smarter way to address this problem.

A STEP CHANGE IN MAINTENANCE

The OAS is more than just an access system, it is enabling technology, which genuinely allows a step change in maintenance management from 're-active' interventions to a 'pro-active' planned regime.

It would be easy to compare the OAS to other forms of access such as work boats and helicopters but this would be unrealistic and misplaced.

The OAS brings the facilities found onshore to the base of the turbine. It not only allows the transfer of personnel, it provides the opportunity to improve the safety and comfort of the technicians whilst allowing optimal utilisation of working time and other facilities.

With warranty contracts driving a reactive approach to the way in which offshore turbines are maintained, productivity is difficult to guarantee.

The offshore oil & gas industry has long benefited from having staff permanently stationed on its assets. The ability to react immediately to changing situations, faults and production needs minimises downtime, thereby maximising productivity.

However some of the benefits are countered by the increased maintenance and legislative burden that fixed accommodation brings.

A suitable OAS equipped vessel provides the advantages of site-based personnel without increasing the overall maintenance burden.

ACCESS IS EVERYTHING

With greater access comes greater control. The OAS gives the ability to access offshore structures in 2.5mH_S sea conditions, greater than any other proven operational system, thereby increasing the available time onboard each turbine or tower.

Stationed in-field allows personnel the opportunity to take advantage of short weather windows without the delays of travel from a port some distance away, thereby reducing downtime and increasing productivity.

Unlike helicopters, an OAS vessel can operate in fog. Normally associated with low pressure and minimal winds this provides the ideal opportunity for proactive maintenance during forced downtime.

The OAS only takes minutes to deploy for access and offers a high connection success rate. This eliminates the frustration of long journeys from shore without being able to gain access due to sea conditions on site.

Several personnel can be accommodated on one vessel reducing the number of small boats required, lowering the overall risk and cost.

HOW CAN THE OAS ADD VALUE?

Correct vessel selection is essential to optimise the benefits of an OAS. Below are just a few of the activities which can be considered for consolidation into the operations of a suitable OAS equipped vessel.

CURRENT OPTION	OAS VESSEL OPTION
– Multiple work boats travelling daily from shore with personnel exposed to sea state and the need to 'step onto ladders' in moving conditions. – Or helicopter transfer (including safety briefing and check-in period) with the need to use winch into nacelle mounted basket. – Both options introduce limitations on operating time and range.	– Staff permanently based on the vessel. Crew change on a rotational basis minimises the travel time from shore. – High comfort levels leading to better staff retention with to higher safety and welfare standards. – No range or time limitation on vessel operations.
– Peripatetic workforce, only together at workplace.	– Ability to work with personnel to develop a culture of safety and productivity.
– High cost lift barge used as accommodation when not lifting, extending hire period beyond initial installation or delaying further installations.	– Technician accommodation during commissioning allowing lift vessel to be deployed installing further turbines. Thereby reducing installation (and hire) period.
– Hotels or local recruitment to port. Onshore travel risks at the beginning and end of long days.	– Technician accommodation during Operations & Maintenance allowing virtually immediate response.
– Costly onshore warehouse spares facility and/or delivery time from suppliers.	– Spares storage at the foot of each turbine/tower allowing immediate change without travel time delays.
– Return parts for onshore repair with associated delays due to travel time.	– Extensive workshop facilities onboard for onsite small repairs with direct access, via the OAS, to the turbine.
– Charter of additional specialist ROV vessel. Reliance upon third-party availability.	– ROV facilities to allow subsea surveys whilst technicians are onboard turbines.
– Charter of additional specialist DP 2 vessel. Reliance upon third-party availability.	– In-field cable laying and repair facility. Reducing downtime and allowing expansion of a field whilst conducting ongoing maintenance.
– Additional charter vessel with associated reliance upon third-party availability.	– Bathymetry monitoring equipment available at any time.
– Additional charter vessel with associated reliance upon third-party availability.	– Environmental assessment equipment including provision of onboard laboratories if required.
– Additional vessel for generator positioning with associated reliance upon third-party availability and delays due to travel times.	– Portable power generation for maintenance when turbine in 'blackout' condition. Lifted direct to turbine using vessel crane.
– Navigational safety is currently left to automated NAVAIDs on the turbines.	– Safety Guard Ship. With sites moving closer to shipping lanes consider the benefits of have someone on site 24 hours-per-day to monitor the safety of your assets and passing vessels.