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Sebastian Chivers, a director at renewable energy consulting firm PMSS, discusses the importance of interface management



range of clients over the last 10 years in varying interface management assignments, and as a result our consultants have developed a bespoke interface management system for offshore wind projects.

Interface management can be described as the systematic control of all responsibilities and communications between the various parties involved in a project. Given the significance of human involvement in most operations, it is important that interactions between people are managed and carefully coordinated to avoid incidents resulting from misunderstandings and lack of information.

A "one size fits all" approach is neither reasonable nor practical. The approach must be risk based and tailored considering the complexity of the project and the resources involved. This tailored risk-based approach must meet the primary criteria of recognising those situations or activities that might lead to the project suffering significant risk or loss.

The overall goal of the interface management system is the early identification of issues that could potentially have an impact on project

performance. Impacts could potentially be on cost, programme, quality, health and safety etc., in order to reduce or remove their impact and promote accurate and well-timed communications with other project participants. Examples of this may include control of engineering drawings and specifications, design calculations, third party reports, project schedule information and so on.

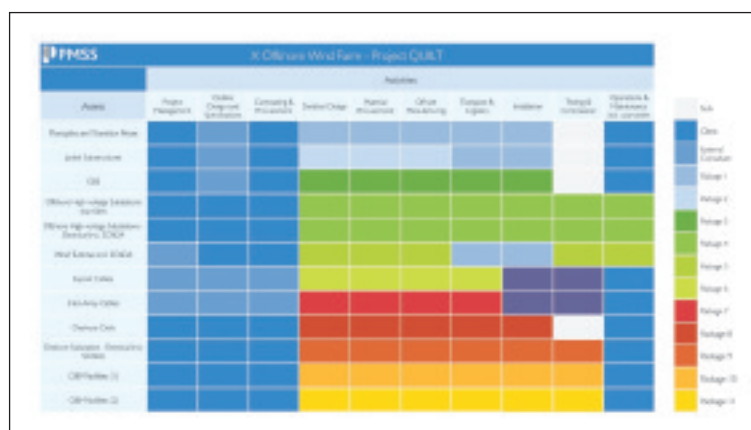
From PMSS's experience, a logical first step in the development of an interface management system is generally to map, define and illustrate the supply chain strategy, which through PMSS's interface management framework is displayed graphically through a project Quilt. The Quilt is a tool that helps to simplistically illustrate the overview between all major project participants and helps to identify the roles and responsibilities of all parties. It is at this stage that the project needs to identify the ability of the supply chain to perform the roles assigned and ensure competence and capacity within the industry to carry out these roles.

Following development of the project Quilt, and in parallel with

In today's rapidly growing offshore wind sector, where typical multi-contract projects now involve 10-20 discrete contract packages, multiple project participants, a geographically dispersed supply chain, a variety of suppliers and service providers and a broad range of parties, all requiring timely exchange of information between themselves and other project stakeholders, interface and risk management are critical tools in reducing project risk.

Interface management as a tool, specifically in offshore wind design, construction and O&M, is proven to have significant importance with regards to risk management, package management, health, safety and environmental control, QA/QC and the overall safe and successful execution of a project. Examples of improvements could be the reduction of project conflicts among project participants through planning and close coordination, and the optimisation of the project schedule thereby reducing the overall project cost.

PMSS has been working with a





professional training for the renewable energy industry

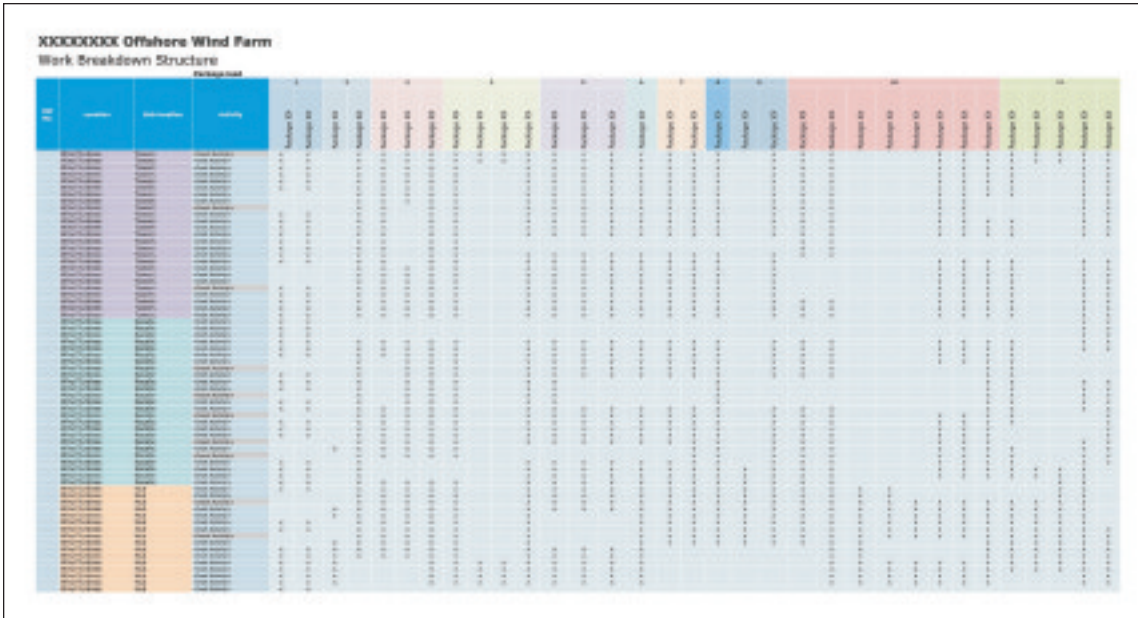
PMSS are committed to raising the bar of the wind industry health and safety performance and competence and as such have developed a set of high quality, relevant and flexible health & safety and CDM training products that can also be linked to our internationally renowned professional support services.

Our team of consultants and expert trainers are all seasoned renewable energy professionals who have had many years of hands-on direct experience in the industry. Our consultants are innovative, passionate about results and go beyond standard solutions to help ensure business success for our clients.

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development of the ITT packages, a detailed Work Breakdown Structure, or “WBS” is compiled by the relevant project team members.

The WBS defines at a detailed level the scope of delivery of each of the contract packages as described in the Quilt. It also defines who the custodian contractors are, and who the related contactors are for each project activity.

Once the WBS is fully populated, it is then paramount for a project to assess all of the individual interactions between all activities, or line items in the WBS, as these define the project interfaces. As a starting point, every activity on the WBS has a number of potential interfaces with every other activity on the WBS.

Typically, for a well-organised project the level of detail generally defined in the WBS is usually in excess of 1,000 line items. This data is captured in a Project Interface Register, which for a WBS for 1,000 line items interfaces requiring active management in excess of 3,000 line items.

The purpose of the Interface Register is as tool to identify, allocate,

manage and record the control of interface risks on the project.

Interface management typically fits within the sponsor’s project services function, reporting directly to the Project Manager. The interface management team provides proactive, hands-on delivery of interface control. This should be considered as part of the overall risk management strategy for the project and must be adequately resourced in order to optimise effort expended against the potential mistakes that can be made.

It is well-documented that effort correctly targeted in the management

of risks on major projects results in reduction of failures and non-conformances and thus overall can save time and money.

The graph shown plots the quality of asset from 0 to 100% along the horizontal axis and the cost of managing non-conformances and failures along the vertical axis. At present for offshore wind projects, we consider the management input to be significantly below the optimum level for projects of the magnitude and complexity being undertaken, and therefore the cost of failures and non-conformances can be inordinately high.





It should also be noted that the increased cost of failures and non-conformances for offshore wind, compared to typical manufacturing activity, is considerably higher which significantly raises the optimum management input required.

In offshore wind, where a young industry is being rapidly deployed in an unforgiving environment and where mistakes are expensive and potentially impossible to remedy, the importance of getting it right first time is paramount.

From the installation of the first two UK turbines at Blyth in 1999 through to the recent commissioning of the latest 300MW at Thanet, PMSS has been capturing offshore wind lessons learnt data across a wide range of disciplines in order to help our clients to improve the performance of their projects.

In the context of interface management, if we look back to 1999 our first two offshore machines at Blyth - two turbines, a cable and a grid connection, with a simple contracting structure with minimal packages - was perhaps something in the order of 10-20 managed interfaces.

The outcome with limited attention to interfaces was some lost time and some cost, but probably considered bearable at the time by the client for a demonstration type project.

From 2002-2007, projects were typically in the order of 25-30 turbines,

and a mixture of multi-contract and EPC. Assets included turbines, inter-array and export cables, occasional requirement for an offshore substation platform, onshore substation and onshore O&M facility and we typically managed interfaces in the hundreds.

The outcome for projects with limited proactive management of interface activity resulted in significant overspend and time loss for both the client and EPC contractors, which resulted in all contracting parties becoming more risk adverse.

2007-2011 saw projects moving further offshore, in deeper water and at a much increased scale. Typically projects are ranging from 100-300 turbines, with multiple offshore substations, complex cable routing and grid issues, and they are virtually all multi-contract and client managed. The potential number of interfaces requiring active management are now in the multiple thousands.

It must be stressed that each and every one of these interfaces has the potential to result in significant unexpected cost and delay to the project.

The outcome experienced to date with formal interface management processes, but perhaps still not implemented to the optimum level, has been better definition, clearer scopes and more concise contracts, improved communications, and in certain specific instances reduced risk in terms of costs and programme.

The result of this is on occasions being able to foresee problems happening, but not having the resource or time available to rectify these.

From now to 2020, projects may be in excess of 200km from shore, in deeper water with multiple projects within a zone, zones in excess of 3,000 turbines, multiple offshore substations with AC-DC converter stations with DC offshore to shore connections and offshore accommodation platforms and complex access and logistics challenges.

The potential outcome if we do not manage interfaces and risk appropriately could be prohibitive excess cost and "trans-season" delays, and whilst fundamental to the viability of the project, also could have the potential to destroy stakeholder confidence and significantly impact on the industry as a whole.

PMSS's corporate vision is that proper understanding and management of risk in the offshore wind sector is necessary to drive costs down and grow a sustainable market.

Sebastian Chivers is a director at PMSS and has worked in the renewable energy sector since 2001 and in offshore wind since the construction of North Hoyle in 2003. Chivers has provided support to some 20 separate offshore projects throughout UK, Europe and more recently in the USA.

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