

New Multipurpose Service Vessel with DP2 at Attractive Charter Rates

Introduction

A new service vessel has been designed, not just another CTV but a tailor-made windfarm workboat. Thorough market investigations have shown an over-supply of crew transfer vessels, charter rates fall as the demand decreases, consequently only the most economical ones will survive. On the other side, there is a growing need for multipurpose ships, performing numerous tasks in the O&M phase, DP2 capable, with accommodation for technicians and 2-week offshore endurance. Such vessels are either not available or chartered in from the oil+gas market for day rates which are not appropriate for offshore wind energy.



Approach

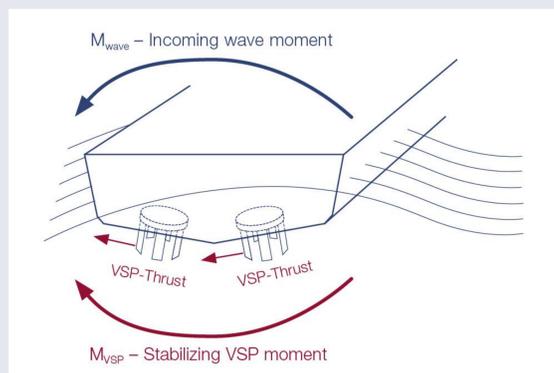
What capabilities should a new design offer in order to reduce the maintenance costs of the turbines? Looking at the cost drivers we see tasks, such as regular inspection of the foundations by ROVs or divers, oil change in the turbines lasting up to five hours, supply of the OSS with big PSVs, or the daily shuttle between harbour and windpark as endurance is too small. The new approach is to design one vessel which can perform all those various jobs. For further cost reduction tasks need to be allocated which can be done simultaneously, e.g. foundation inspection and oil change. Finally ship dimensions have to be selected carefully to find the best compromise between load capacity, sea worthiness, speed and regulatory limits.

Methods

Main emphasis has been put on offering a stable and save working environment even at significant wave heights of 2,5m. So the ship's length has been dimensioned to 39m, that's approx. 50% of the wave length prevailing in the North Sea and thus following a well-known naval architect's rule for reducing pitch motions. In multiple design loops all main dimensions have been selected as a balance between technical and commercial requirements. Transfer of service technicians will be facilitated using an access system. So various gangway systems compensating the ship movements have been integrated and investigated.

Propulsion will be generated by two Voith Schneider Propellers, offering best manoeuvrability enhanced by roll stabilization. The combination of the DP2 systems and the high precision in maneuvering allows the vessel to approach any offshore location and stay for the duration of the task

Active roll stabilization by
Voith Schneider Propeller



Results

The optimal design has a length of 39,80m, beam 8,75m and depth 3,90m. Full load displacement sums up to 380t. Characterized by its spacious deck of 75 m² it can accommodate various container suits to perform multiple maintenance jobs. Additionally, fuel, fresh water and sewage can be shipped.

With an endurance of 14 days the vessel will be able to operate independently from onshore supply. Twelve technicians will be accommodated in double cabins.

To prove that the step-over to the turbines can be facilitated by an offshore access system a simulator study has been performed. The propulsion units were automatically controlled in order to keep the ship's bow as stable as possible in reach of the boat landing. The results showed a watch box within the range of a gangway access system, e.g. the MOTs.

For the specific maintenance jobs deck lay outs have been prepared.



Conclusions



Reducing costs in the O&M phase needs tailor-made ships with low daily charter rates. The Maintainer fits perfectly into this market segment, it offers the best features of regular and established supply vessels, tugs and CTVs. Such a combination of capacities and capabilities does not exist so far. This unique vessel design incorporates years of development, discussions with operators and feed-back from service operations. Well known components as the VSP and DP2 are combined with new systems, e.g. a gangway access-system, to facilitate demanding maintenance jobs even in rough sea conditions.

