

**The On board Wave Motion Estimator OWME:
WaMoS II provides wave profiles for ship motion prediction from nautical X-Band
Radar data**

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Abstract

The Offshore industry employs many vessels and floating structures which are subject to wave induced motions which are affecting and often even preventing their operation. Several offshore operations such as the set-down of a module, the tensioning of a tanker or the landing of a helicopter, need a short period of quiescent vessel motions to be conducted safely. Thus, a system to predict such short periods of quiescent vessel motions a few minutes in advance, could reduce the costly ‘Waiting for Weather’.

The Joint Industry Project the ‘On board Wave and Motion Estimator (OWME)’ aimed to develop, demonstrate and validate a system capable of predicting the vessel motions on board and real time in advance. The system was designed to predict the vessel motions at zero forward speed in moderate sea states including swell conditions. The OWME systems uses the Wave Monitoring System WaMoS II to derive wave profiles in a distance of 1–2km ahead of a vessel by means of radar. A linear propagation module is used to predict the wave field at the vessel location at the time the recorded wave train will reach it. Finally, the vessel motion resulting from this wave conditions are estimated. This set-up allows a motion prediction of 1–2 minutes ahead, depending on the location of the measurement point and the velocity of the wave train.

This contribution gives an overview of the OWME system and the results of a first validation campaign, focussing on the method to derive wave trains using the WaMoS II system.

OWME has been conducted with the following participating companies: StatoilHydro, Total, SBM/SBM Gusto, Seaflex/Kongsberg, TU-Delft, OceanWaveS, University of Oslo and MARIN. The project received the Eureka status and support from the Dutch Ministry of Economic affairs through SenterNovem.