

EVENING TECHNICAL MEETING

16 February 2022

5.30pm - 8.30pm

Parmelia Hilton, Mill Street, Perth 6000

OFFSHORE HUB UWA

RECENT ADVANCES IN FLOATING VESSEL RESPONSE PREDICTIONS

Integrated offshore floating system response, Ian Milne - UWA & Matt Zed - Woodside

Taking an integrated approach to system response can yield significant benefits. The conventional approach to assess the operability of floating facilities is typically based on wave height and not the wave-induced responses which form the basis of the operating envelope. The OFFshore Hub challenged this paradigm through the creation and validation of a new software tool which predicts vessel motions, velocities or accelerations from a fully described sea state. Pairing this with Bayesian statistical uncertainty methods has transformed decision making in the field, increasing the efficiency and safety of offshore operations.

Tackling gap resonance during side-by-side offloading, Wenhua Zhao & Ian Milne - UWA

Prelude FLNG is a large turret moored production and storage facility designed to offload to an LNG carrier, which is moored alongside in an open ocean environment. In certain sea-states, wave resonance can occur within the gap between the two vessels, causing increased water motion in the gap, which needs to be planned for operationally.

The OFFshore Hub have used an extensive experimental campaign (both 2D and 3D) and a series of numerical simulations (potential flow and CFD) to improve the fundamental understanding of this phenomenon (gap resonance), and to ultimately improve the prediction of operating conditions. The outcomes of this research is relevant for other common scenarios e.g. ship to ship transfers, offshore heavy lifts, walk-to-work vessel services, and moon-pools in floating vessels.

Data informed decisions, Hugh Wolgamot - UWA & Yuriy Drobyshevski - Shell

Predicting the heading response of a large weathervaning facility such as Prelude is a crucial input to key offshore operational decisions. Heading prediction has been a topic of interest in the OFFshore Hub, where a group of academics have worked closely with Shell colleagues on identifying and understanding the uncertainties in heading prediction. Using numerical ocean models, field data and customised field trials, simplified heading models and statistical approaches, the project has identified key drivers of uncertainty in input forecast and heading calculations and worked to reduce their impact in response calculations.

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5 Ticket Member Pass	\$130	\$205	\$230
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**ARC Research Hub
for Offshore
Floating Facilities**