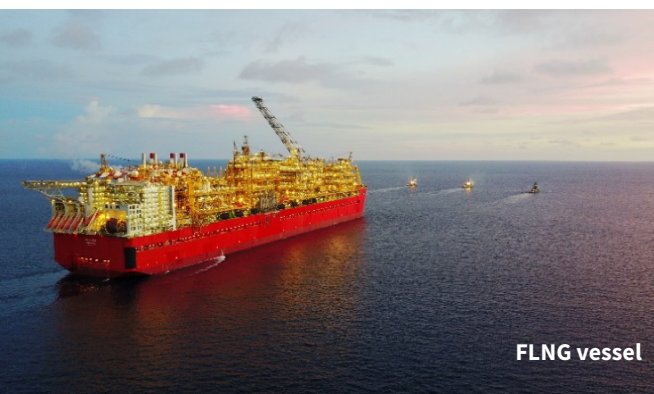


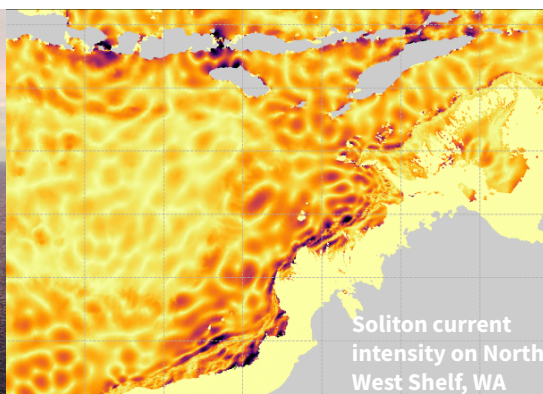
The ARC Industrial Transformation Research Hub for Offshore Floating Facilities at UWA



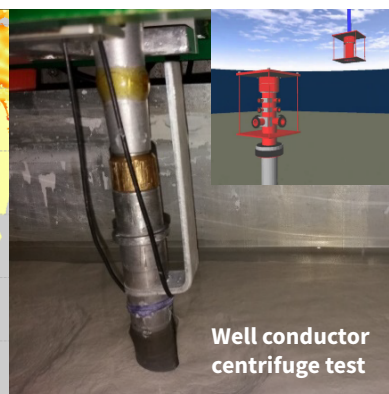
THE UNIVERSITY OF
**WESTERN
AUSTRALIA**



FLNG vessel



Soliton current
intensity on North
West Shelf, WA



Well conductor
centrifuge test

About

The Industrial Transformation Research Hub for Offshore Floating Facilities (OFFshore ITRH) is a multi-disciplinary research group jointly funded by industry and the Australian Research Council. The OFFshore ITRH launched in Q2 2016 with an aim to tackle the critical engineering challenges for the next generation of offshore oil and gas projects by creating novel designs, new technologies and new operating procedures in a collaborative manner. The clear focus of the OFFshore ITRH is on making an impact rather than just creating output.

Structure

The OFFshore ITRH is led by Professor Phil Watson who works with a team of over 40 academic staff and PhD students principally based in the Indian Ocean Marine Research Centre at UWA. This team brings a wealth of technical experience to the activities of the OFFshore ITRH, and are integrated within the larger ocean science and engineering community at UWA.

Research

The OFFshore ITRH involves five interlinked multi-disciplinary projects in the areas of ocean forecasting, vessel motion and offloading, riser and mooring design, novel anchors and subsea foundations, and data analytics for response prediction and facility longevity. Each project team is working to develop new technologies for the design of safe and efficient offshore projects. The research program involves a blend of physical and numerical modelling supported by fieldwork and analysis of observations from existing facilities.

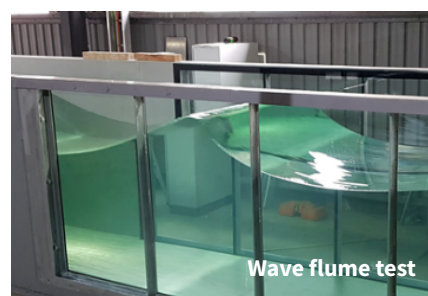
Further details are provided overleaf.

Partners and Collaborators

The OFFshore ITRH industry partners are Shell, Woodside Energy, Bureau Veritas and Lloyds Register. Each partner organization is actively involved in shaping the research direction of each project stream, committed to driving the technology transfer within their company, and assisting with the mentorship of both researchers and PhD students.

Our university partners include Western Sydney University and the University of Southampton.

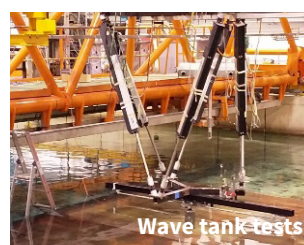
Broader collaborations have been formed with The Alan Turing Institute, BP and NGI, with others being explored. This draws together knowledge and skills which adds significant value to the OFFshore ITRH research.



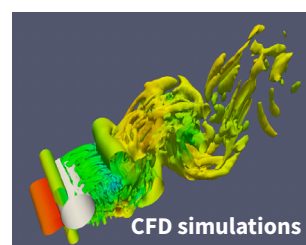
Wave flume test

Capabilities

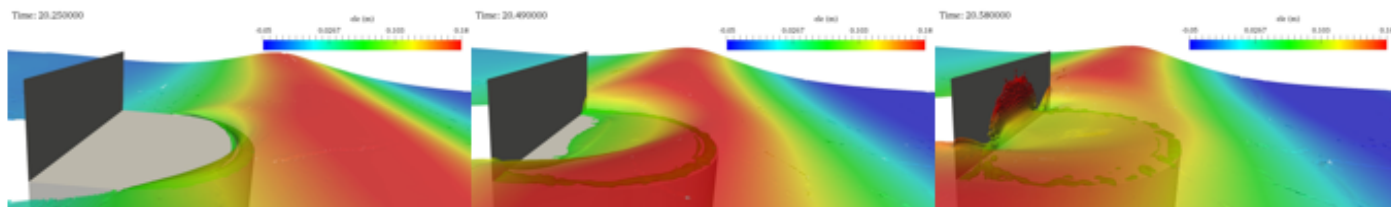
The OFFshore ITRH is hosted at UWA by the Oceans Graduate School. The Offshore ITRH is expanding UWA's existing world-leading facilities in order to deliver successful outcomes for the wide-ranging research program. These facilities include the National Geotechnical Centrifuge Facility (NGCF), UWA's unique O-tube cyclone simulation flume facilities, a newly refurbished 50m long wave flume, ocean data collection and analysis equipment, numerical modelling facilities, as well as the Woodside FutureLab OceanWorks.



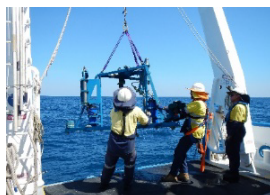
Wave tank tests



CFD simulations



Simulating greenwater over-topping of an FPSO bow



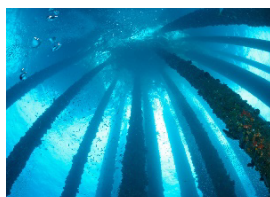
Project One: Metocean hazards from solitons

Quantifying soliton hazards on the North West Shelf by using high resolution field observations to validate numerical models. Other aims include assessing the spatial variability of solitons and tidally-forced flow, and their impact on subsea infrastructure and operations.



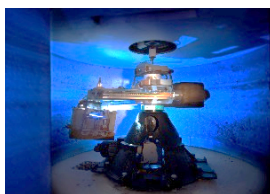
Project Two: Wave-structure interaction

Using world class numerical modelling, experimental testing and full scale measurements for the analysis of complex wave-structure interactions to inform design and improve the efficiency of floating facility operations.



Project Three: Reliable moorings and risers

Developing new design tools to reduce design uncertainty and increase the reliability of steel catenary risers, water intake risers, drilling risers and mooring lines.



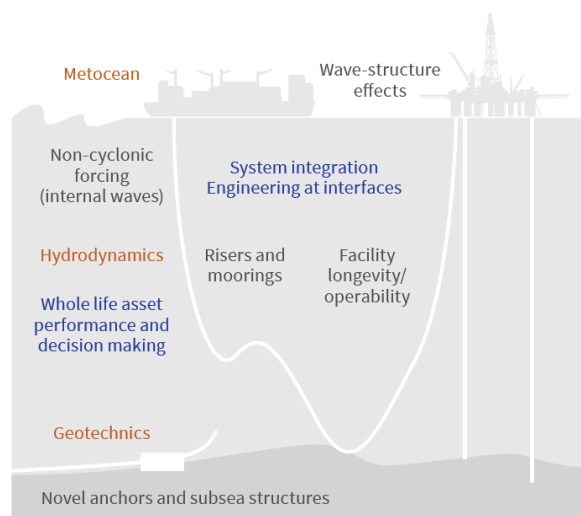
Project Four: Novel anchors and subsea foundation systems

Developing low-cost, low-risk subsea anchors and foundation solutions which benefit from the consideration of whole-life behaviour.



Project Five: Floating facility data analytics for condition / longevity monitoring

Applying engineering statistics and modern data analytics to create ready to use tools which enhance the facility whole-life performance across projects one to four.



Integrated themes of the OFFshore ITRH



"The OFFshore Hub provides a unique research environment with global recognition, demonstrating the value of accessible domain expertise, industry collaboration, and innovation through cross discipline integration."

Paul Gardner, Industry Partner, Shell

"Two years in, the Offshore Hub is really hitting its stride. Our collaboration with UWA has produced exciting innovations that have yielded significant value for our business, and for the other industry partners"

Jan Flynn, Industry Partner, Woodside



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Australian Government
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