Special Session:

Physical Modelling of Installation of Fixed OWT Foundations

Organisers

Shengjie Rui; Norwegian Geotechnical Institute (NGI)/National University of Singapore (NUS) (shengjierui94@gmail.com)

Shengjie Rui is a Marie Curie Research Fellow specializing in marine renewable energy, offshore geotechnics, and ocean engineering. He has authored over 50 publications, including 45 peer-reviewed papers. He serves as a corresponding/nominated member of ISSMGE's TC104 (Physical Modelling) and TC209 (Offshore Geotechnics), and holds editorial positions as a board member of *Ocean Engineering* and Associate Editor of the *KSCE Journal of Civil Engineering*. He has reviewed for more than 40 SCI journals and received over 20 honors and awards, including ISSMGE's Bright Spark Lecturer and the Best Paper Award at OMAE 2024.

Phil Watson; the University of Western Australia (UWA) (phillip.watson@uwa.edu.au)

Phil is the Shell Professor of Offshore Engineering and Director of the ARC Industrial Transformation Research Hub on Transforming offshore Infrastructure through Digital Engineering (TIDE) at the University of Western Australia. He is a Fellow of The Australian Academy of Technology and Engineering and the Institution of Engineers Australia, and the current Chair of ISSMGE Technical Committee 209 'Offshore Geotechnics'. Phil is passionate about aligning industry and academia to solve challenges facing the offshore sector – and training tomorrows generation of geotechnical leaders.

Miguel Cabrera; Delft University of Technology (TU Delft) (m.a.cabrera@tudelft.nl)

Miguel's research is in the area of geotechnical engineering with a focus on complex, multiphase, geophysical and environmental flows, and soil-fluid-structure interaction. His interests lie in linking the fundamental understanding of such physical processes with the current and future challenges of the natural and built environment. Miguel's PhD focused on the simulation of granular flows in rotating systems. From 2016 to 2022 Miguel was appointed as Assistant and then Associate Professor at Universidad de los Andes, Colombia. Since August 2022, Miguel joined the section of Geo-Engineering at TU Delft, working in the physical modelling of land instabilities and soil-structure interaction.

Ross McAdam; Ørsted Wind Power UK Ltd (ROSMC@orsted.com)

Ross has worked in renewable energy generation research for 20 years, from tidal turbine fluid-structure interaction and advanced composites design to offshore wind geotechnics. Ross is a Senior Geotechnical Engineer at Ørsted Wind Power UK Ltd, where he focuses on developing installation methods and in-place frameworks for offshore wind foundations. Prior to working at Ørsted, Ross was an Associate Professor at the University of Oxford, working on several joint industry projects including PISA, PISA II, ALPACA and PICASO.

Session Description

This special session aims to bring together researchers, practitioners, and industry experts to explore recent advances and emerging challenges in physical modelling as applied to geotechnical engineering for foundation installation, including **monopiles and piles/buckets for jacket foundations**. Physical modelling—using centrifuge tests and 1g laboratory experiments—plays a vital role in understanding complex soil–structure interactions during pile installation, validating numerical simulations, and refining design methodologies under environmental conditions.

The scope of this session includes, but is not limited to:

- **Centrifuge and 1g modelling techniques for replicating installation**
- **Effect of installation technique on in-service foundation response**
- **Comparisons of physical modelling, numerical studies and field tests of bottom-fixed foundations**
- **New equipment, technologies and calculation methods for bottom-fixed installation**

We welcome contributions that showcase experimental innovations and insights from testing and simulation that aims to advance safe, cost-effective, and environmentally responsible installation of offshore wind foundations. This session seeks to foster collaboration between academia and industry, address key technical challenges, and promote best practices in physical modelling in this critical aspect of offshore wind development.