

**Project Title:** Efficient ‘Whole-life’ anchoring systems for offshore floating renewables

**Supervisory Team:** Katherine Kwa, David White & Susan Gourvenec

**Funding:** Fully funded PhD at University of Southampton, including tuition Fees and a stipend of £17,668 tax-free per annum for up to 3.5 years.

### Project Description:

This PhD offers you the opportunity to tackle the urgent real-world challenge of developing efficient deep water anchoring systems for offshore floating renewable energy infrastructure. You will also have the opportunity to work as part of a vibrant research group focussed on a range of offshore engineering challenges and engage with a range of industry partners.

Decarbonisation of our energy supply to meet UK and international Net Zero targets by 2050 requires rapid expansion of the offshore renewable energy industry. New, efficient and reliable anchoring systems are needed to support future floating offshore renewable energy infrastructure which will operate further from shore in deeper waters, where high energy wind resources are located. The emerging concept of ‘whole-life’ geotechnical behaviour is also unlocking new anchoring design approaches. Whole-life changes in seabed strength during the system life offers the potential for new design efficiencies.

In this PhD research project, you will develop new concepts for the anchoring design of floating renewable facilities, harnessing beneficial ‘whole-life’ responses of the seabed. You will undertake physical (element and model centrifuge scale) experiments, taking advantage of the [Geomechanics Laboratory and Geotechnical Centrifuge Facilities on Boldrewood Innovation Campus](#). You will use the experimental data to develop numerical models of more efficient anchor behaviour and you will integrate the anchor response into existing mooring-floater models to capture the connected and improved full-floating response of offshore floating renewable energy devices.

PhD project forms part of the activities of the [Royal Academy of Engineering Research Fellowship held by Dr Kwa](#). You will join the [Centre of Excellence for Intelligent and Resilient Ocean Engineering \(IROE\)](#) supported through the Royal Academy of Engineering Chair in Emerging Technologies scheme and have access to the [EPSRC Supergen Offshore Renewable Energy \(ORE\) Hub](#), providing you with a team of diverse and energetic researchers to become part of. The project will enable you to develop your engineering skills in geomechanics and collaborate with industry. The outcomes of this project are expected to be taken up by the offshore renewable energy sector and therefore have direct impact on the industry by improving anchor and full-floating system design methods.

**Entry Requirements:** A First class or high 2:1 Degree in Civil Engineering or related discipline with enthusiasm for further study in soil mechanics and geotechnical engineering is required. Applicants will need to be eligible for UK fees.

**How to apply:** Apply online at <https://www.southampton.ac.uk/courses/how-to-apply/postgraduate-applications.page>. Select programme type (Research), 2022/23, Faculty of Physical Sciences and Engineering, next page select “PhD Engineering & Environment (Full time)”. In Section 2 of the application form you should insert the name of the supervisor Katherine Kwa. Applications due: **Friday December 9<sup>th</sup>, 2022**. Please contact Katherine ([k.a.kwa@soton.ac.uk](mailto:k.a.kwa@soton.ac.uk)) for any queries.