

JOB DESCRIPTION

Vacancy Ref: A3361

Job Title: Senior Research Associate in Wave Energy Converter Experimental and Computational Modelling. (For the research project: "Novel High Performance Wave Energy Converters with advanced control, reliability and survivability systems through machine-learning forecasting (NHP-WEC)".)	Present Grade: 7
Department: Engineering	
Directly responsible to: Professor George A. Aggidis	
Supervisory responsibility for: support in supervision of PhD and final year UG/PG students	
Other contacts Dr Xiandong Ma, Professor C. James Taylor Internal: All Lancaster academic and professional staff External: All industry and university collaborators including University of Hull project collaborators, scientific community	
<p>This is a 30-month appointment for advanced research in the field of Wave Energy Converter Development and more specifically with the Concept Optimisation. Our aim is to advance WEC technology by developing essential device control and monitoring systems that are integrated with high fidelity sea state forecasting. To bring focus, research into novel algorithms and methods will be orientated around two case study challenges, namely the TALOS concept device and the SmartWave toolset. Our ambition is to bridge the gap between small-scale modelling and the higher TRL now required in order to evidence costs and demonstrate commercialisation potential.</p> <p>The work will be performed in close collaboration with the team at Lancaster and their University of Hull partners. Your role will be involved with the Concept Optimisation including Experimental and Numerical Hydrodynamic Analysis, Geometric Optimisation, and Power Take-Off Design, using Computational Modelling (Computational Fluid Dynamics) and Experimental Modelling (Wave Tank Testing). Understanding the interactions between a WEC and ocean waves is essential for device modelling with respect to its stability and energy extraction capabilities. With every design iteration, the hydrodynamic characteristics can change and need to be fully understood, as they will affect all subsequent stages of analysis and development. You will contribute to the assembly and testing of a scale model of the TALOS WEC using the state-of-the-art facilities at Lancaster University Engineering Department and in collaboration with our University of Hull partners. It is highly desirable that you have experience in both computational and experimental modelling; experience and knowledge in Wave Energy Converter technology; experience on Computational Fluid Dynamics, 3D mechanical CAD and Wave Tank Testing. We will offer specific training and support in any area that is required.</p> <p>The main activities are:</p> <ul style="list-style-type: none"> - Computational Modelling and Numerical Hydrodynamic Analysis - 3D mechanical CAD and Computational Fluid Dynamics - Geometric and Concept Optimisation - Power Take-Off Design - Procurement of parts and assembly of a scale model of the TALOS WEC - Experimental Modelling, Wave Tank Testing - Validation and cost calculations related to WECs like TALOS. <p>Other important activities are:</p> <ul style="list-style-type: none"> - To take responsibility of the tasks and reporting of the project - To participate to the project meetings organised by the consortium; preparation of the report for the status of the project to be presented to seminars; preparation and presentation of talks, posters and reports to disseminate the results of the project. - To present papers to relevant international and national conferences and workshops and contribute to journal papers. - To contribute to the organisation of conferences, workshops and meetings. - To assist PhD students and final year project students in the team in the development of different aspects of the research. - To support the dissemination and exploitation of the results of the research. 	