

## Candidate Information

<b>Position:</b>	Research Fellow
<b>School/Department:</b>	Environmental Change and Resilience
<b>Reference:</b>	20/108403
<b>Closing Date:</b>	Wednesday 25 November 2020
<b>Salary:</b>	£33,797 to £40,322 per annum.
<b>Anticipated Interview Date:</b>	Wednesday 09 December 2020
<b>Duration:</b>	This is a fixed term contract until 30 June 2022

### JOB PURPOSE:

To be an active member of the research project/team contributing to the delivery of the research objective of the Centre for Advanced Sustainable Energy (CASE) funded project entitled "Floating Solar Energy – a contributor to decarbonisation". The key objectives of the overall research programme are to support the development of design tools for floating solar arrays through the development of numerical models and the verification of wind loading from physical measurements on a prototype. Also, the deployment potential for FPV in Northern Ireland will be researched along with initial studies on the feasibility of combined floating thermal and PV arrays. This is one of three posts with specific research focus as follows;

- Development of frameworks for Boundary Element Method and Finite Volume Computational Fluid Dynamics methods for investigation of floating solar platform response and loading under environmental loads [under wave and wind loading]
- Calibration and validation of numerical methods using data obtained during physical testing
- Investigation and benchmarking of existing system characteristics in parallel with physical testing,
- Development of associated data suitable for informing the intelligent cost-effective design of the complete system,
- Numerical modelling of the proposed system indicating dynamic and kinematic response to environmental loading including aero-hydro-elastic effects
- System optimization through the exploration of design space using numerical methods developed
- Definition of design loads for large-scale Floating Solar Platforms with an installed generating capacity of up to 100MW

### MAJOR DUTIES:

1. Undertake research under supervision within "Floating Solar Energy – a contributor to decarbonisation" Project.
2. Act as an active research member of the project research team with the aim of delivery of the project objectives.
3. Develop a suite of numerical models which are capable of accurately predicting the motions and loading of various floating solar platform designs.
4. Perform hydrodynamic and aerodynamic analysis of floating solar systems for more exposed bodies of water.
5. Investigate the design space of the demonstration platform built and identify scope for design improvement for future developments.
6. Develop strong working relationships with industrial partners working with CASE project.
7. Disseminate the results of the research within the sector through the presentation of conference papers and attendance/presentations at exhibitions etc. in consultation with the supervisor.
8. Writing journal papers in consultation with the supervisor in high impact factor journals in the field of marine/offshore/ocean engineering.
9. Carry out analyses, critical evaluations, and interpretations using methodologies and other techniques appropriate to the area of research.
10. Present regular progress reports on research to project partners, members of CASE management team or to external audiences to disseminate and publicise research findings.

11. Assist the academic supervisors and industrial partners with administrative tasks associated with the project to ensure it is completed on time and within budget, e.g. organisation of project meetings and documentation, risk assessment of research activities, collection and collation of industry timesheets. These include the organisation of project meetings and documentation, financial control, risk assessment of research activities.
12. Read academic papers, journal and textbooks to keep abreast of developments in own specialism and related disciplines.

**Planning and Organising:**

1. Plan for specific aspects of research programmes. Timescales range from 1-6 months in advance and contribute to research group planning.
2. Plan for the use of research resources, field, laboratories and workshops where appropriate.
3. Plan own day-to-day activity within the framework of the agreed research programme.
4. Plan up to a year in advance to meet deadlines for journal publications and to prepare presentations and papers for conferences.
5. Coordinate and liaise with other members of the research group overwork progress.
6. Coordinate and liaise with industrial project partners and subcontractors.

**Resource Management Responsibilities:**

1. Ensure research resources are used effectively and efficiently to ensure the timely delivery of research outputs.
2. Provide guidance as required to support staff and any students who may be assisting with research.

**Internal and External Relationships:**

1. Liaise regularly with colleagues and students and members of the research project.
2. Participate and support the CASE Researcher group
3. Build internal contacts and participate in internal networks for the exchange of information and to form relationships for future collaboration.
4. Attract potential customers for the outputs from the research projects.
5. Join external networks to share information and ideas.
6. Contribute to the School's outreach programme by establishing links with local community groups, industries etc.

**ESSENTIAL CRITERIA:**

1. Have a PhD in Naval Architecture, Ocean/Offshore engineering, Coastal and marine engineering, Mechanical or Civil Engineering.
2. At least 3 years' recent relevant research experience in Marine engineering or Offshore/Ocean engineering with proven experience of research methods and techniques used in established research programmes.
3. Record of accomplishment appropriate to career stage.
4. Previous experience in managing resources and project finances.
5. Sufficient breadth and depth of specialist knowledge in the discipline and of research methods and techniques to work within established research programmes.
6. Ability to communicate complex information clearly.
7. Ability to build contacts and participate in internal and external networks.
8. Demonstrable intellectual ability.
9. Ability to assess and organise resources; Proven ability to assess and organise resources to ensure delivery to project milestones.
10. Ability to meet the travel requirements of this post, eg site visits.

**DESIRABLE CRITERIA:**

1. Fluid-Structure-Interaction and/or Hydrodynamic analysis as part of their PhD subject.
2. Recent relevant research experience in hydrodynamic and fluid-structure-interaction, marine dynamics with proven experience of research methods and techniques used in established research programmes.
3. Experience of working on an industry lead project or project with considerable industry input, working in a multi-institutional and interdisciplinary team.
4. Ability to contribute to broader management and administrative processes.
5. Contribute to the School's outreach programme by links with industry, community groups etc.
6. Previous experience in using data acquisition, data analysis and post-processing tools.