



TUS

**Technological University of the Shannon:
Midlands Midwest**
Ollscoil Teicneolaíochta na Sionainne:
Lár Tíre Iarthar Láir

POSTGRADUATE RESEARCH OPPORTUNITY

Project Title: Novel design and manufacturing strategies for innovative offshore composite hydrogen tanks (HyFloatComp)

Project Description: This proposal aims to develop advanced manufacturing and design approaches for offshore composite hydrogen tanks, which will play a crucial role in the energy supply chain from offshore wind energy to end users. These composite tanks offer flexibility and strength, allowing them to withstand hydrogen pressure and environmental loads. The project will focus on understanding the structural behaviour of variable angle tow composites under high-pressure hydrogen conditions, considering factors such as fibre distribution and tape geometries. A novel homogenised method for these composites will be proposed, along with the development of an innovative manufacturing technique based on laser-assisted tape placement. Permeation rates of hydrogen on composite materials and relevant mechanical properties will be characterised.

The PhD student will base at the Faculty of Engineering and Built Environment, Technological University of the Shannon, Moylish Campus, Limerick. The funded PhD candidate will work under supervision of a multidisciplinary team and will acquire expertise in simulation and design of composite structures for offshore renewable energy.

Duration of Project: 48 months

Funding Agency: Sustainable Energy Authority of Ireland (SEAI)

The funding provides €25,000 stipend per year and travel expenses to attend conferences.

Type of Degree Offered: PhD

Minimum Qualifications/Experience Necessary/Any Other Requirements:

We are seeking an enthusiastic and motivated individual with a strong academic background and a genuine passion for renewable energy and sustainability. The ideal candidate will have a master's degree in a relevant field such as civil engineering, mechanical engineering, or a related discipline. A strong foundation in simulation and modelling techniques, as well as experience with structural design is highly desirable.

Qualifications

Essential

- Honours Degree (minimum *2.1 honours or equivalent*) in Civil Engineering, Mechanical Engineering, Aerospace Engineering, Materials Engineering or closely related fields.

Desirable

- Research Masters Degree (MSc or MEng, *2.1 honours or equivalent*) in Civil Engineering, Mechanical Engineering, Aerospace Engineering, Materials Engineering or related fields.

Knowledge and Experience

Essential

- A strong background in structural mechanics and structural design.
- Good knowledge in composite materials and their structures.
- Good skills in coding with Python and MATLAB.

Desirable

- In-depth knowledge of computational methods in composite materials and their structures.
- Prior experience in using Ansys/ Abaqus and experience is highly desirable.
- A track record of publishing in peer-reviewed journals.

Research Supervisors: Dr Luan Trinh (TUS Midwest)
Dr Daniela Butan (TUS Midwest)
Dr Paul Leahy (University College Cork)
Prof Paul Weaver (University of Limerick)

For further information please contact: Dr Luan Trinh (luan.trinh@tus.ie)

Download Application Form at [Funded Postgraduate Research Opportunities - TUS](#)

Closing date for receipt of completed application forms is 8th May 2024. In the event that a suitable candidate is not identified by the initial deadline, we retain the option to extend the advertisement period to ensure we find the best-fit candidate for this opportunity.

Please submit your completed application: pro@tus.ie

Please reference **Project Title in all correspondence.**