Sustainable Hybrid Propulsion Technology for Marine Vessels

PhD

Funding: £14,777 for 3 years (UK/EU)
Company: Babcock International Group
Supervisor: Dr Truong Quang Dinh
Start Date: As soon as possible

Project overview

This is an exciting opportunity to work with Energy and Electrical Systems research group at WMG, University of Warwick.

This PhD project seeks to build on the success of the collaborative R&D project between Babcock, WMG and Potenza Technology Ltd.: Innovate UK funded APMS (Agile Power Management Systems) for marine vessels project (2016 – 2018).

Motivation - Modern marine vessels are becoming increasingly reliant on electrical power generation for both auxiliaries and propulsion loads. The clear research challenge in both scientific research and business is to optimise efficiency in production whilst reducing cost and emissions.

Aims - The aim is to develop a new approach to specify and implement an advanced power management strategy (PMS), incorporating intelligent algorithms and energy storage, to improve efficiency, adaptability and resilience of marine vessels while reducing fuel consumption, maintenance costs and environmental impacts.

Main Objectives – You will have full access to the state-of-the-art facilities in WMG’s Energy Innovation Centre, the unique one of its kind in the UK, in order to deliver the following objectives:

1. To develop a complete MiL-SiL-HiL simulation tool-chain to design and rapidly prototype PMS algorithms for hybrid/electric drive vessels based on the work undertaken during the APMS project;
2. To exploit the knowledge of energy storage applicable to the marine sector;
3. To disseminate the scientific outcomes through high-ranking journals and presentations at renowned international conferences/workshops;
4. To expand the capability of the IP already developed and potentially enable Babcock to exploit this in the market, either through licensing or subcontracting system build, integration and through-life support.

Research Strategy Alignment - This project is strongly aligned with two themes of the ‘Energy’ GRP of Warwick: Low Carbon Transport and Energy Management. It leverages the automotive know-how developed at WMG for technology transfer into the marine sector.

Management Strategy – Your learning and research supervision will be supported with specialist expertise from the academic team in WMG, on a day-to-day basis, and regular input from Babcock and quarterly meetings.

Qualifications:
An upper second (2.1) honours degree (or equivalent) with a strong background covering: mathematical analysis, system modelling, control, electronics and computer science. Skills with MATLAB/Simulink is an essential requirement.

**Funding:**
This 3-year position is under the Warwick Collaborative Postgraduate Research Scholarships (WCPRS) to provide a tax-free stipend of £14,777 per annum for UK/EU candidates, with a fee for conference-subsistence.

**To apply**
If you would like to be considered for this position or have any questions please complete our online enquiry form.