

|| SEMS: RESEARCH PROJECT DESCRIPTION

1. Project Background and Description

Ecotoxicological Impact of Perovskite Photovoltaics

This project aims to explore the next key step of control system design for offshore renewable energies (ORE), i.e. the distributed control of a whole ORE farm consisting of hundreds or even thousands of devices to take advantage of economies of scale. The performance of each device is influenced by the neighbouring devices, through the dynamic couplings between them, electrical/mechanical interferences and communication limitations.

2. Project Scope

To ultimately reduce the cost of ORE farms and also ensure the ease of the generality and transferability of the proposed techniques, the project will identify and investigate the key technical issues of ORE farm control, and develop a novel and generic hierarchical adaptive distributed optimal control (HADOC) framework for ORE farms to achieve the following objectives:

Objective 1) Maximise the energy output of the whole farm in different environmental conditions.

Objective 2) Improve power quality to reduce energy storage capacity and improve grid connection.

Objective 3) Guarantee the safe operation of all the devices with sufficient resilience to environmental conditions.

3. Desired Skills from the Student

Control system design

Numerical simulation using MATLAB/SIMULINK

Communication skills in English

4. Supervisory Team

Add supervisory team details

Primary: Dr Guang Li, School of Engineering and Materials Science

Secondary: Dr Hasan Shaheed, School of Engineering and Materials Science