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Strategic Environmental Assessment of Wave energy technologies (SEA Wave)

European Maritime and Fisheries Fund (EMFF)

Progress Report

Progress Report Number: 2

Covered period: Month 7-12

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Beneficiary (or coordinator organisation in case of multiple beneficiaries): The European Marine Energy Centre Ltd (EMEC)

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1 Progress of work plan in the covered period

1.1 General progress:

Summarise the objectives and the achievements, deviations, important problems and difficulties met.

Following the successful launch of the SEA Wave project during months 1-6, the SEA Wave project consortium has had a busy six months with the development of the Environmental Demonstration Strategy, commencement of the data collection campaign and the launching of the Data Platform. A summary of progress under each work package is provided below.

Work package 1: The SEA Wave consortium has met on a regular basis to monitor and control the project's progress against the objectives and tasks outlined in the agreement. EMEC held a progress meeting with the consortium on 19th June to review progress against each work package, to receive updates on developers' schedules and to conduct a comprehensive review of project risks. This allowed EMEC to produce a formal update to the Risk Register in line with task 1.3. Following the progress meeting, a consortium meeting was held in Orkney on 22nd August. Partners who were able to be represented at the meeting were the University of Plymouth, the University of Exeter, Hidromod and Aquatera and other partners called into meeting. This was an interactive meeting which focused on the design and development of the Environmental Demonstration Strategies under work package 2 and compliance with the Data Management Plan, in particular the development of the Data Platform developed by Hidromod. Information regarding potential project deviations due to changes in developer schedules began to emerge during this meeting, with the result that a significant amount of time was devoted to brainstorming opportunities for rescoping the project. In line with best practice project governance, during October EMEC has engaged in essential rescoping which has required the acquisition of detailed information regarding developer testing plans and schedules and close monitoring of budget spend to date.

Work package 2: Following the successful completion of deliverables 2.1 and 2.2 during the last reporting period, Aquatera has led, with engagement from EMEC and the Universities of Exeter and Plymouth, the development of deliverable 2.3, the Environmental Demonstration Strategy (EDS). The EDS was progressed through the priority work streams identified in deliverables 2.1 and 2.2. It sets out the proposed strategic monitoring activity including the rationale for the focus areas, objectives of the monitoring activities, the methodologies to be used and how the findings will be reported and disseminated. The EDS was submitted to project partners and the Steering Group for review, with significant input which ensured that it could be taken forward as a robust strategy within which device-specific Environmental Monitoring Programmes (EMP) can be generated. It has been agreed that the device-specific EMPs will be developed as annexes to the overarching EDS and will be live documents that are devised and amended as further information regarding developer plans becomes available.

Work package 3: During August, the Universities of Plymouth and Exeter were based in Orkney for a period of six weeks to commence the first data collection campaign of the SEA Wave project. The University of Plymouth successfully performed multiple high-definition towed camera array surveys, task 3.1, of both the identified 'impact' sites and reference sites. In line with task 3.1, these data should be able to provide critical information regarding the species assemblages present in the benthic environment, in terms of both diversity and integrity. In addition, baited and unbaited remote underwater video systems were deployed in order to capture more detailed information on larger mobile species. During the August data campaign, despite initial challenging weather and seastate conditions, the University of Exeter performed the initial fisheries biomass assessment within the six-week period, see task 3.3, using a site-wide echosounder survey; the information from this survey should provide critical data for determining fisheries aggregation device effects and species' use of the water column. The data collection campaign also saw the successful completion of the first passive acoustic survey, task 3.4, to capture the soundscape of the area which can be used as a baseline when determining the acoustic signature produced by operational devices.

Whilst Hidromod has been developing the Data Platform collaboratively with the previous SOWFIA project and the sister WESE project, the Universities of Exeter and Plymouth and EMEC have fed into the data management platform's design to ensure that it is suitable for holding and presenting the data in an appropriate format for

the end user. Developer partners, in particular CorPower Ocean, have also worked collaboratively to update WEC designs to facilitate the consideration of options for mounting monitoring equipment. There has also been regular engagement, coordinated by EMEC, between project partners in order to ensure that partners are kept as up to date as possible on plans and location details for WEC deployments.

Work package 4: During September and October, the Universities of Plymouth and Exeter have performed initial data interrogation and quality control checks to ensure that data collected during the August campaign were acceptable, and compliant with the data management plan. This included the development of associated metadata which will be essential to support the data upload to the platform. Hidromod has expended significant effort in defining the secondary data and models that will be developed during the project, and ensuring that the data platform is structured in such a way to accept and disseminate the information in a user-friendly and accessible manner. This included the definition of standards, with particular focus on metadata. This work culminated in the development of deliverable 4.5 - Guidelines on secondary data and model dissemination.

Work package 5: This work package has not commenced and is not expected to commence until month 18.

Work package 6: A number of dissemination activities have occurred during this reporting period. SEA Wave has been presented at number of conferences and events, as summarised below:

- All-Energy, Glasgow, UK, 15-16 May 2019
 - R. Prodhol (Wello) presented at EMEC's wave and tidal speed update session and included developments within SEA Wave.
 - SEA Wave featured on EMEC's exhibition stand – project logo represented on stand and within a video.
- INSITE/MAST event in Glasgow, UK, 17 May 2019
 - E. Sheehan (University of Plymouth) provided an oral presentation titled 'Ecological interactions with offshore installations – the potential benefits of ambitious management for temperate ecosystems'.
 - L. Holmes (University of Plymouth) presented a poster titled 'Development of epibenthic assemblages on artificial habitat associated with marine renewable infrastructure'.
 - A. Bicknell (University of Exeter) provided an oral presentation on baited camera methods.
 - J. Fox (Aquatera) provided an oral presentation providing an overview of the SEA Wave project.
- European Maritime Day, Lisbon, Portugal, 16-17 May 2019
 - C. Long (EMEC) provided an overview of efforts in environmental monitoring for ocean energy including an introduction to the monitoring methods employed in the SEA Wave project.
- European Wave and Tidal Energy Conference (EWTEC 2019), Naples, Italy, 2-5 September 2019
 - Partners met with key industry representatives to discuss the SEA Wave project.
 - Project highlighted during OES Environmental Workshop.
- Ocean Energy Europe, Dublin, Ireland, 30 September-1 October 2019
 - SEA Wave logo represented on EMEC exhibition stand and part of EMEC leaflet.
- International WaTERS, Orkney, 2-5 October 2019
 - Visit of delegates from international research centres and test sites to EMEC where SEA Wave project was referenced throughout discussions.

In terms of public relations, EMEC has developed, in collaboration with the WESE project, an article for Tethys Story which is due for publication shortly. Social media activity has focused around the commencement of the data collection campaign: <https://twitter.com/amyycartwright/status/1166048339605037057>. Aquatera and EMEC have continued to engage with the Steering Group, with a telephone meeting planned with the group in early November.

Hidromod has been advancing the development of the joint platform between SEA Wave and the WESE project. A fronted mock of the data platform was produced for initial approval by both sets of project partners. This platform was launched on 31st October and is available via dmp.hidromod, with a more formal launch and press release planned for the start of 2020. The platform will be migrated to a new host domain shortly.

1.2 Progress on the project against initial general and specific objectives:

Compare the activities planned (based on the Grant Agreement and/or the previous report) to the progress made, by specific objective and according the agreed work plan in the initial proposal (Annex I of the Grant Agreement); list achieved deliverables and identify partners involved, including their roles; describe major subcontractors and other stakeholders involved.

The following table summarises progress to date, end of Month 12, on each of the project objectives.

Objective	Status	Progress
Undertaking gap analysis to support targeted collection campaigns	Underway	Development of overarching EDS using research prioritisation for previous gap analysis.
Producing a statistical modelling framework for a range of technologies	Underway	First data collection campaign completed. Discussions continue with developers regarding modelling possibilities for device-mounted equipment.
Generating a data dissemination strategy	Underway	Data Platform successfully launched with seamless integration with EU data sharing platforms. Presence on Tethys achieved.
Engaging with EU regulatory platforms	Underway	Continued engagement with ORIP OE and targeted project dissemination events planned.
Developing a prototype of a systematic environmental monitoring process	Underway	Review of monitoring and mitigation techniques completed, in consultation with industry, advisors, regulators and academia.
Employing multiple monitoring methodologies	Underway	First data collection campaign completed with the use of towed HD camera array, BRUVs, echosounder survey and passive hydrophone.
Implementing an innovative research programme	Underway	University of Washington's 3G-AMP mounted onto Ocean Energy's device. Initial data collection campaign lessons learnt to be produced.
Feeding project outcomes into consenting procedures	Soon to commence	Steering Group agreement for engagement in project outputs, particularly guidance.

A number of deliverables have been completed during this reporting period, as summarised below:

- D1.4 – Progress Report – EMEC (led), all partners contributed.
- D2.3 – Environmental Demonstration Strategies – Aquatera (led), EMEC, Exeter University, Plymouth University contributed.
- D4.5 – Guidelines on secondary data and model dissemination – Hidromod (led), Exeter University, Plymouth University and EMEC contributed.
- D6.3 – Minutes from the Steering Group – Aquatera (led), EMEC contributed.
- D6.5 – Data Platform – Hidromod (led), all partners contributed.

1.3 Identified deviations, problems and corrective actions taken in the period:

If any, identify the nature and the reason for the deviation or encountered problems (technical, financial or organisational), identify partners involved, clarify impacts on the activities and deliverables, present the strategy to overcome them; in case of deviations described in the last report describe to which extent you have managed to get back on track.

Developers have begun to indicate that their schedules are likely to be delayed and there is a possibility of changes in deployment locations for various reasons. Ocean Energy has determined that it will be unlikely to meet its original testing schedule and will not be installing at EMEC within the timeframe of the project, due to a change in funding structure. CorPower Ocean has indicated that EMEC is unlikely to be the site for the full-scale WEC system deployment due to funding delays from Scottish Government. Significant deviations from the technical specification at the fabrication stage for the full-scale Laminaria device have resulted in a substantial

delay to the project, resulting in a new deployment schedule of 2021. The project which was supporting the deployment of an array of Wello devices has been terminated.

Following further information provided by the developers regarding changes to schedules and deployment locations, it was agreed to hold an extraordinary consortium meeting to discuss how the project should be rescope and what opportunities exist in order to continue to achieve the project's objectives. Due to these significant project deviations, EMEC has been gathering detailed schedule and budgetary information from project partners in order to conduct a comprehensive rescope of the project and reduce the future risk to the consortium's ability to meet the project's objectives. A rescope project plan will be supplied to be EMFF Project Adviser very shortly for review.

Reassurances have been supplied by UK Government regarding UK partners' participation in the project post Brexit, in both a deal and no-deal scenario.

2 Work plan for the next period

2.1 Planned activities in the next reporting period:

Give an outlook on planned activities and deliverables, for the period until the next report, according to the agreed work plan in the initial proposal (Annex I of the Grant Agreement).

Work package 1: It is anticipated that a significant rescope of the project will be required within the next period to account for changes in developer plans and schedules; this will require significant input from all partners and will be led by EMEC as lead beneficiary.

Work packages 2 & 3: Once an agreed amended plan is in place, EMEC, Exeter University and Plymouth University will require to develop, in collaboration with Aquatera, monitoring plans for the rescope monitoring campaigns. EMEC and the University of Exeter have agreed to coordinate on calibrations of hydrophone equipment in order to allow seasonal collection of comparable data. EMEC plans to conduct the next passive acoustic characterisation over the winter period and the University of Exeter is aiming for Spring 2020 for the next fisheries acoustic survey and another hydrophone deployment in order to characterise the soundscape.

Work package 4: Following on from the successful completion of the August 2019 data collection campaign, the University of Plymouth will be conducting video analysis. The University of Exeter plans to complete the initial treatment and interrogation of the sound and fisheries acoustic data which were collected in 2019.

Work package 5: This work package is due to commence in month 18; however, the task within the work package will be reviewed in detail during the rescope of the project.

Work package 6: Early within the next period, the data platform will be officially launched. EMEC and the Universities of Exeter and Plymouth will be required to provide ongoing support and feedback to Hidromod to ensure that the platform is of suitable design and that any 'bugs' are managed effectively. Prior to the next reporting period, it will be necessary to update the platform with survey metadata and data collected during the August campaign.

To ensure that the Steering Group discussions are aligned with the ORJIP OE Steering Group, plans are in place to have a Steering Group telephone discussion in November 2019 and an in-person Steering Group in March 2020.

EMEC will be presenting on the SEA Wave project at the Pan American Marine Energy Conference in Costa Rica in January. Plans are also afoot for the consortium to have a significant presence at the upcoming EIMR - Environmental Interaction with Marine Renewables - conference in April 2020. The consortium is seeking to secure several speaking slots at this conference. An abstract regarding the SEA Wave project will be submitted for an oral presentation at the ICOE - International Conference for Ocean Energy - in May.

Developers will continue to undertake detailed design work and begin the fabrication of devices within the next period.

3 Other issues

If any, indicate other project-related issues to be brought to the attention of the EASME and/or the European Commission.

EMEC will be communicating with the Project Adviser regarding the anticipated project deviation, and proposed mitigation measures with respect to rescoping the project, in mid-November.

There are no other project-related issues requiring the attention of EASME at this stage.