

Press release 2 (30/05/2019)

WESE project launch environmental monitoring activities around wave energy converters in BiMEP and Mutriku (Basque Country, Northern Spain)

In the framework of the WESE project devoted to the collection, processing, analysis and sharing of environmental data around wave energy devices currently operating at sea, different monitoring activities were undertaken around the MARMOK-A-5 device of IDOM-Oceantec and Mutriku Wave Power Plant in the Basque Country (Northern Spain) between the 6th and 22nd of May 2019, coordinated by AZTI.

The collection, processing, analysis and sharing of environmental data in sites where devices are operating in Spanish and Portuguese coastal waters, represent different types of technology locations and, therefore, different types of marine environments (onshore, nearshore and offshore) that can potentially be affected by wave energy projects: IDOM-Oceantec MARMOK-A-5 installed in Biscay Marine Energy Platform BiMEP, WaveRoller (AW Energy) installed in Peniche (Portugal) and Mutriku Wave Power Plant in operation in Spain.

Monitoring plans have been developed (see Deliverable 2.1 available from the project website) with the objective of obtaining data for:

- a) **Underwater sound** emissions coming from MARMOK-A-5 device of IDOM-Oceantec and Mutriku Wave Power Plant.
- b) **Electromagnetic Field (EMF)** generation of submarine cables that provides service to the MARMOK-A-5 device.
- c) **Seabed integrity alteration** associated with the MARMOK-A-5 moorings and mooring lines.

Similar campaigns are expected to be undertaken in the Peniche test site in Portugal as soon as the WaveRoller (AW Energy) device is installed during summer 2019. The results and analysis coming from these campaigns are subject of different reports that will be finalized by 2020. These data will support the development of models for the analysis of potential cumulative pressures and environmental impacts of future larger scale wave energy deployments.

More information about the methodology, together with pictures and videos from the monitoring works undertaken, are accessible in the WESE web site (<http://www.wese-project.eu/>) and in our social media ([Twitter](#), [Linkedin](#)).



Underwater Sound

Underwater sound emissions were monitored by means of a combination of static, mobile and airborne measurements. Static measurements consist in the deployment of a passive acoustic sensor moored in a specific location and for a long period of time. In this case, a SoundTrap ST300 HF of Ocean Instruments belonging to WavEC was moored in BiMEP and Mutriku test sites for a period of 45 monitoring days. On the left, the photo shows the mooring line preparation.

Mobile surveys consist on passive acoustic measurements in different locations (17 sampling stations in BiMEP and Mutriku around wave energy devices) during a short period of time (5 minutes in each sampling station). The same equipment was used for the static measurements (SoundTrap ST300 HF). The photos below were taken during sound measurements at BiMEP.



Underwater sound measurements preparation. Credits: AZTI.



CTD measurements. Credits: AZTI

Airborne measurements were made in the same locations and time period of that of the mobile surveys with a specific equipment developed by CTN of Cartagena (Spain). Finally, auxiliary measurements of depth profiles of conductivity and temperature, were undertaken using a CTD to calculate density and sound speed profiles to support underwater sound propagation analysis. Below, a picture during CTD deployment near to MARMOK-A-5 device.

Seabed Integrity

To evaluate possible alterations of the seabed integrity by the moorings and mooring lines of the MARMOK-A-5 device in BiMEP, a side scan sonar survey and a visual inspection with a ROV were undertaken with the collaboration of Ekocean Servicios Marinos (www.ekocean.es) providing the boat needed for the campaign (12 m length vessel) and ESGEMAR S.A. Estudios Geológicos Marinos (www.esgemar.com), in charge of the Side Scan sonar monitoring, and Instalsub (www.instalsub.com/), in charge of the ROV inspection.



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Preparation of the CTD equipment for depth profiles. Credits: AZTI.



ROV preparation for seabed integrity visual inspection. Credits: AZTI.

Electromagnetic Fields (EMF)

The EMF monitoring was done with the collaboration of MAPPEM Geophysics (www.mappem-geophysics.com) using a towed 'fish', including 4 channels for very high sensitivity electric field dipoles and a 3-axes fluxgate magnetometer, simultaneously recorded. Data were recorded at 2 kHz. The system is also equipped with attitude and navigation sensors to recalculate its position underwater (2-axes tilt meters, pressure depth sensor and altimeter). Different transects over the cables providing service to the MARMOK-A-5 of IDOM-Oceantec were followed for EMF data acquisition.



Preparation of the EMF measurements on board. Credits: AZTI.

This work has been possible thanks to several people who helped on carrying on with success and security all the monitoring campaigns. The WESE team is especially grateful to Pedro Losa, Josu Merino, Imanol Bartolomé and Daniel Tvarez from Ekocean, Jorge Rey and Roger Leis from ESGEMAR, Josep Maria Rovirosa, Brais Lorenzo, Sergi Castellar and Josep Fleta from Instalsub, Alexis Lepot and Fabien Gaspari from MAPPEM Geophysics, BiMEP surveillance service and Olatz Ajuria and Jon Lekube from EVE during the acoustic campaigns in Mutriku Wave Power Plant.



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