

## ID22 - THE SOUND OF WAVES IN THE MUTRIKU WAVE ENERGY PLANT

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The launch of the first acoustic observatory installed in the Wave Energy Plant of Mutriku took place on the 5th of June 2018. Located in the Bay of Biscay, this wave power plant was inaugurated in 2011 by the Basque Energy Agency, EVE (Fig 1.). The Mutriku Wave Energy Plant (<https://www.bimep.com/pages/mutriku>) is the only infrastructure related to the ocean energies in Gipuzkoa (northern Spain) (Fig.1). It's the first commercial European wave energy plant based on the principle of oscillating water column (OWC) and the only one worldwide connected to the electricity grid. In fact, in June 2018, its 16 turbines reached a cumulative production of 1.6 GWh which was injected into the electricity grid. Since then, the wave energy plant of Mutriku also provides the opportunity to developers to test electric transformation turbines.



**Fig 1. Mutriku Wave Power Plant.**

The acoustic observatory, managed by AZTI, will allow a continuous real time data monitoring of the underwater noise generated by the plant thanks to a hydrophone moored in front of the plant and connected to land by a submarine cable (Fig 2.). This observatory was funded by the Provincial Council of Gipuzkoa and the installation tasks were financed by Euskalmet, the Basque weather agency. The collaboration between different Basque public entities in this project is a sign of promoting clean and sustainable technologies.



**Fig.2. icListen Hydrophone of Ocean Sonics installed in the acoustic observatory of the Mutriku Wave Power Plant**

The installed hydrophone, an icListen HF of Ocean Sonics, will allow to advance in the knowledge of the environmental impact related to underwater noise generated by the Mutriku Wave Energy Plant. For this purpose the underwater noise indicators linked to the Descriptor 11 (introduction of energy, including underwater noise, does not adversely affect the ecosystem) of the Marine Strategy Framework Directive (MSFD) (Directive 2008/56/CE) are being monitored: Indicator 11.1.2: Trends in the ambient noise level within the 1/3 octave bands 63 and 125 Hz (center frequency) (re 1µPa RMS; average noise level in these octave). All the data, the graphic outputs and the potential applications for scientific, technological and educational purposes obtained from the oceanographic observatory will be transferred to the data management portal of EMODnet Physics (<http://www.emodnet-physics.eu/Portal>).

In this way, the oceanographic observatory installed in the Wave Energy Plant of Mutriku will become the third observatory in Europe that contributes to the EMODnet Physics portal with data related to marine underwater noise.

*Keywords – underwater sound, EMODnet Physics, Mutriku Wave Power Plant, Marine Strategy Framework Directive.*