

## ENVIRONMENTAL EFFECTS METADATA SURVEY FORM

Name of person updating the form

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Date submitted

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Project name: OCEANTEC Wave Energy Converter

Planned  In Operation  Completed

Project description:

*Project Developer:* Oceantec Energías Marinas, S.L.

*Technology Developer:* Oceantec Energías Marinas, S.L.

*Technology type:* Floating device, linear absorber or attenuator

*Resource (wave, tidal):* Wave

*Project scale (test site, prototype, array, commercial):* single device, 1:4 scale

*Installed capacity (MW):* 10 kW

*Project Website:* <http://www.oceantecenergy.com/>

*Launch Date:* TBD

*Additional Description:* The OCEANTEC Wave Energy Converter (WEC) is a novel offshore floating device that can be classified as a linear absorber or attenuator. The way it extracts energy from ocean waves is based on the relative inertial motion that waves cause in a gyroscopic device. This motion is used to feed an electric generator through a series of transformation stages. The gyroscopic device is located inside a lengthened structure or hull that stays aligned with the wave front, resulting in a pitching motion. The structure that comprises the absorber and the rest of the elements has a vessel-like design and a scalable size. This size is adapted to the predominant sea climate of the selected location. For instance, in a location with predominant wave periods between 10 and 12 s (typical of the Northern Coast of Spain), the length of the structure can range 40 to 60m.

Location: The sea trials have been carried out in Cala Murgita, situated between Pasaia and San Sebastian, in the Northern Coast of Spain. This area has a depth of 29-30m and is characterized by a sandy seabed.

*Coordinates:* 43.3308272°, -1.9597166°

Process status: Identification of the WEC concept and starting of the conceptual design was made in 2005. Following the identification of the WEC, in 2006, the International Patent of the OCEANTEC WEC was filed. The Technology was validated through Numerical Simulations and Laboratory Tests (Phase 1) in 2007, also the search for investors started the same year after the validation. In 2008 a €4.5m Investment led by IBERDROLA was obtained, and the Technology entirely was transferred to OCEANTEC ENERGÍAS MARINAS, SL. Sea trials of a quarter scale prototype (Phase 2) was carried out in the same year as well. In 2009 a Power train manufacture & integration was made.

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Licensing information (brief description): Initial 12 month permit during testing period (starting July 2008). Later extended for another 12 months.

Key Environmental issues: *brief description on the most important environmental issues raised by the project (e.g. Sensitive species/habitats/areas that were of particular concern and/or received special protection) and how they were addressed.*

Environmental webpage: *link to project official environmental webpage (if available)*

Baseline studies and project effects studies: OCEANTEC				
General description				
Receptor	Study description including question and/or objective (several can be listed per receptor)	Design and methods (brief description)	Results (brief description)	Status (planned, underway, completed, with dates)
Physical environment	Water and sediment quality	On-site inspections	No impact.	Completed
	Coastal processes (sediment fluxes, waves and tidal currents)	3 ADCP profilers	3 ADCP profilers	Completed
	Onshore physical environment	N/A	N/A	N/A
	Investigation into the mixing effects provided by the flow discharged from the system's turbines	N/A	N/A	N/A
Biological Environment	Impact on designated sites	N/A	N/A	N/A
	Marine ecology	N/A	N/A	N/A
	Fish	N/A	N/A	N/A
	Electromagnetic fields	N/A	N/A	N/A
	Marine mammals	N/A	N/A	N/A
	Onshore and intertidal ecology	N/A	N/A	N/A
Human Environment	Birds	N/A	N/A	N/A
	Landscape and seascape	N/A	N/A	N/A
	Archaeology and cultural heritage	N/A	N/A	N/A
	Socio-economics	N/A	N/A	N/A
	Noise	N/A	N/A	N/A
	Commercial fisheries	N/A	N/A	N/A
	Navigation: detailed navigation risk assessment	N/A	N/A	N/A
Other relevant projects	N/A	N/A	N/A	
<b>Reports or Papers</b>	<p>Internal reports (confidential)</p> <p>Fernando Salcedo, Pablo Ruiz-Minguela, Raúl Rodríguez, Pierpaolo Ricci, Maider Santos. "OCEANTEC: Sea trials results of a quarter scale prototype". 8th European Wave and Tidal Energy Conference (EWTEC), Uppsala (SWEDEN).</p> <p>Ruiz-Minguela, J.P.; Rodríguez, R.; Ricci, P.; Marón, A.; Prieto, M.E.; Fernández, D.; Taboada, M. "Design and Testing of the Mooring System for a New Offshore Wave Energy Converter".</p>			

	2nd International Conference on Ocean Energy (ICOE 2008), Brest (FRANCE).
<b>Research Projects</b>	Spanish funded projects: PSE-MAR 2006-2009 and Ocean lider 2009-2012

### Monitoring and adaptive management: OCEANTEC

#### General description

<b>Receptor</b>	<b>Monitoring program description including question and/or objective</b> (several can be listed per receptor)	<b>Design and methods</b> (brief description)	<b>Results</b> (brief description)	<b>Status</b> (planned, underway, completed, with dates)
Physical environment				
Benthos				
Fish and fisheries				
Large vertebrates				
Birds				
Marine uses/ users				
Other* (can be named)				
<b>Reports or Papers</b>	(Key papers on the areas addressed should be listed here; when possible the files themselves can be made available in downloadable PDF format, alternatively links to the files or project website can be provided when available e.g. SeaGen.)			
<b>Research Projects</b>	(past or on-going environmental research projects at the site)			