

OCEANTEC WEC

Name of person filing the form

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Date submitted

April 2012

Project name: OCEANTEC Wave Energy Converter

Company: Oceantec Energías Marinas, S.L.

Project description:

Project Developer: Oceantec Energías Marinas, S.L.

Technology type: Floating device, linear absorber or attenuator

Resource: wave

Project scale: single device, 1:4 scale

Installed capacity (MW): 10 kW

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. The centre of the test area selected is placed in coordinates: XUTM = 585.52 m; YUTM = 4.799.033m. This area has a depth of 29-30m and is characterized by a sandy seabed.

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.

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

Environmental survey issues:

Baseline and project effects studies: Oceantec pre-commercial demonstration project

General description				
Environmental Statement				
Receptor	Study description	Design and methods	Results	Status
Physical environment	Water and sediment quality	On site inspections	No impact	Finished
	Coastal processes (sediment fluxes, waves and tidal currents)	3 ADCP profilers	Good correlation in 2 of them, offset measurements in the third	Finished
	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
	Birds	N/A	N/A	N/A
Human environment	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
Reports or papers	Internal reports (confidential)			
	<p>Fernando Salcedo, Pablo Ruiz-Minguela, Raúl Rodríguez, Pierpaolo Ricci, Mainer 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". 2nd International Conference on Ocean Energy (ICOE 2008), Brest (FRANCE).</p>			
Research projects	Spanish funded projects: PSE-MAR 2006-2009 and Ocean Lider 2009-2012			