

## Accepted Manuscript

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PII: S2214-1669(17)30072-3

DOI: <http://dx.doi.org/10.1016/j.ijome.2017.08.007>

Reference: IJOME 174

To appear in:

Received Date: 24 May 2017

Revised Date: 28 August 2017

Accepted Date: 31 August 2017



Please cite this article as: G. Tampier, L. Grueter, Hydrodynamic Analysis of a Heaving Wave Energy Converter, (2017), doi: <http://dx.doi.org/10.1016/j.ijome.2017.08.007>

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# Hydrodynamic Analysis of a Heaving Wave Energy Converter

Gonzalo Tampier B.\*, Laura Grueter\*\*

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## Abstract

In the present paper, the development of a model scale Wave Energy Converter (WEC) and an experimental WEC test rig are presented, and results of numerical simulations and experimental measurements are shown. The presented point absorber WEC is coupled to a generic power take-off (PTO) and is restricted to pure heave motion in regular waves. Experiments were carried out at the Universidad Austral de Chile (UACH) Wave Tank and results from responses and efficiencies were compared with data from the BEM (boundary element method) code WAMIT. Numerical and experimental results showed good agreement. Finally, results were extrapolated and superposed with typical wave energy spectra found in different Chilean regions, providing a first performance estimation for a wave energy converter in Chile. Results are discussed and compared with an existing technology and give an insight of the potential for wave energy technologies in Chile. Further investigation is proposed for an analysis in irregular waves and the

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