



LAMWEC PROJECT

The LAMWEC project seeks to develop and test a full scale (200kW) Laminaria wave energy converter (WEC). The project focuses on progressing the prototype from TRL stage 5 (technology validated in relevant environment) to 7 (system prototype demonstration in operational environment).

A key challenge for the wave energy sector is the survivability of wecs in extreme storm conditions. The LAMWEC project will take a number of steps to develop the Laminaria WEC and prove its survivability.

LAMWEC CONSORTIUM

The LAMWEC project is made up of a consortium of ocean energy experts, with over 30 years of combined practical experience in the sector. The consortium is led by Laminaria, and includes EMEC, Innosea, Ghent University, and TTI Testing.

“LAMWEC is taking a step by step approach in developing each aspect of the device prior to real-sea testing at EMEC.”

NEIL KERMODE, EMEC

PROVING WEC SURVIVABILITY KEY STEPS:

LAMWEC is taking a number of important steps to develop the Laminaria WEC and prove its survivability at pre-commercial scale. These steps include:

1. The design and build of a 200kW Laminaria WEC incorporating a scaled up version of the power take-off (PTO) and storm protection system;
2. The development of a new anchor design suitable for a range of seabed configurations;
3. The development of a mooring and pulley system for the 11.8m diameter (280t) device that will support the innovative storm protection system, PTO, and frame; and
4. Performance assessment of the full scale device at TRL 7 in real sea conditions at the European Marine Energy Centre's grid connected wave test site in Orkney, Scotland.

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“We are keen to come and test our technology at full scale at the challenging EMEC site.

We are confident that our technology can survive any storm with conservation of nominal production.

Together with our partners the aim of the LAMWEC project is to develop a device that is reliable and predictable in operations and maintenance.”

STEVEN NAUWELAERTS
LAMINARIA

INNOSEA TESTING

Leading the design simulations work package for LAMWEC, Innosea tested a 1/16 scale model at the Coastal, Ocean and Sediment Transport (COAST) laboratory at Plymouth University to explore the load regimes that the device will experience when it is tested at full-scale at EMEC in 2017.

“The tank tests provided insight into the optimum size of the device.”

RÉMY PASCAL, INNOSEA



TO DATE

TTI Testing has used the hydrodynamic coefficients supplied by Innosea to perform time domain modelling of the mooring system, including PTO response, to ascertain device response and mooring system loads. Using these loads, and results from tank testing and North Sea trials, TTI have designed the full-scale intent mooring strops, and designed and procured a bespoke bending fatigue test rig for these. The test rig is under construction and due to commence fatigue cycling in February 2017.

Laminaria has completed the design of a generic anchoring method, including a remotely operable mechanical and electrical connector, as well as the pulley system and the majority of the PTO frame.

UGent has completed theoretical studies of the PTO setup and is currently preparing lab testing.



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