

# OCEAN HARVESTING

## Generating electricity, one wave at a time

### INFINITY Project awarded EUR 1.7 million from Clean Energy Transition Partnership (CETP) program

Karlskrona/Gothenburg, Sweden; 1 November 2024

#### **INFINITY Project will develop lifetime-aware Model Predictive Control (MPC) to be tested on InfinityWECs power take-off in an HIL test rig at VGA in Italy.**

Optimizing power take-off systems and control algorithms for wave energy converters is essential to reduce the use of materials per MW installed capacity and lower the levelized cost of energy (LCOE). The INFINITY Project delivers the next generation PTO and control system, taking advantage of learnings and test methods from both the IMPACT and the VALID H2020 projects.

The project is co-ordinated by RISE Research Institute of Sweden, and will run for three years starting in December 2024. New high-fidelity simulation models will be developed by COER at Maynooth University to facilitate the development of a new non-linear moment-based and lifetime-aware MPC algorithm by Politecnico Di Torino. A 1:3 scale InfinityWEC power take-off will be built, and tested with the new control algorithm in VGAs HIL test-rig in Italy. The tests will demonstrate real-time performance of the new MPC, and verify the improved lifetime of the power take-off, leading to reduced CAPEX/OPEX relative to the annual energy production. The project aims for 20% LCOE reduction.

“The INFINITY project will pave the way for model predictive control on real-time control systems, which will significantly reduce LCOE for wave energy,” says Mikael Sidenmark, CEO of Ocean Harvesting. “Our InfinityWEC is designed specifically to benefit from advanced control algorithms in order to maximize energy production, and also control motion and loads for reliable operation and long life.” he continues.

The InfinityWEC power take-off uses a combination of highly efficient direct drive ball screw actuators and a hydrostatic pre-tensioning system to provide instant force control capabilities. The buoy is made of ultra-high performance concrete (UHPC) in a honeycomb structure, leading to very low weight. The combination of high performance and use of low-cost and circular materials results in exceptional resource efficiency with low weight, cost and CO<sub>2</sub> per MW/MWh.

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