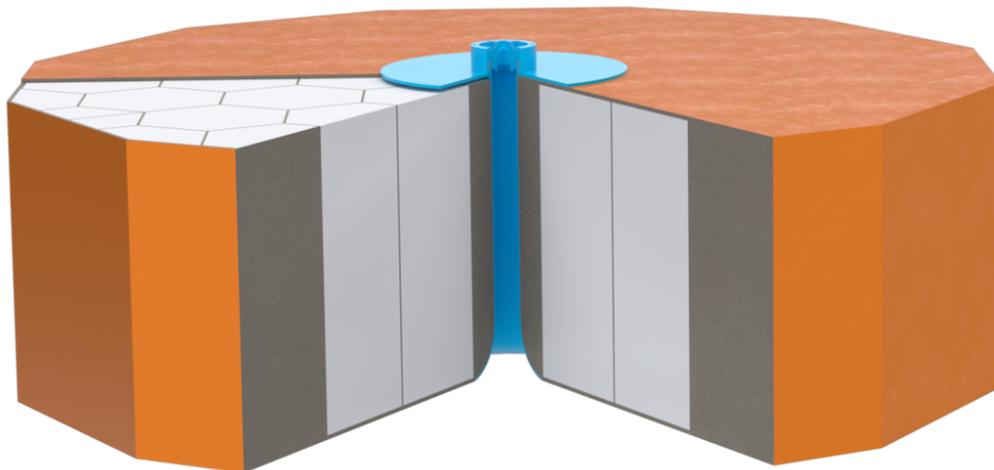


Ocean Harvesting develops a new buoy made of high-strength concrete for its wave energy converter

Karlskrona/Gothenburg, Sweden; 6 May 2022



Novel concrete InfinityWEC buoy at 400 m³ and 120 ton

Ocean Harvesting is developing a novel concrete hull for the prime mover (buoy) of the InfinityWEC wave energy converter, using high strength concrete with low environmental footprint and excellent durability. The solution allows for large scale production and results in a buoy with a weight similar to a conventional steel hull, but at 1/4 of the cost and 1/3 of the CO₂ footprint.

Highly flowable concrete is poured into a mould with void fillers, forming the concrete shell and the internal honeycomb structure, one of the strongest structures in nature. Most of the raw materials will be sourced locally at the installation site, where the buoy is cast in a process common in civil engineering. The buoy will be towed or shipped to the installation site and linked to the InfinityWEC PTO system with a mooring rope, which enables quick and diverless attachment and detachment of the buoy from the PTO system during installation and maintenance operations.

The RISE (Research Institutes of Sweden) department for Infrastructure and Concrete Technology has developed a unique high-performance concrete mix for the buoy, as part of the joint industry project WECHull (www.wechull.se/post/wechull-concrete-mix). To facilitate a thin-walled, lightweight structure and easy, rapid manufacturing, alternative reinforcement measures were investigated, evaluating the use of fibres of different types (carbon, aramid, glass, steel and biomass), as well as polymer reinforcement with carbon-textile grids. By using recycled aggregates and replacing more than 50% of the cement content, InfinityWEC's buoy is aligned with the European Circular Economy Action Plan.

The next development stage for Ocean Harvesting is a sea trial of InfinityWEC at scale 1:3, a project planned to start in November 2022. The sea trial will demonstrate the InfinityWEC technology and its control system, and their performance in the real sea environment. This is a critical step towards the final validation stage of the system at full scale and the commercialization of the technology.

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About Wave Power

The estimated global theoretical potential of wave power¹ exceeds the global use of electricity and is available in coastal areas where most of the population lives.

Wave power produces electricity more consistently and at different times compared to wind & solar power and therefore contributes to offset intermittency, reducing the total cost of carbon-free electricity. Wave power furthermore needs only half the amount of energy storage to balance the power production to a constant output throughout the whole year compared to wind power, further reducing the total cost of energy.

Wave power will be an important part of the future renewable energy mix, contributing both to lower cost of energy and a more stable energy system.

About Ocean Harvesting and InfinityWEC

Ocean Harvesting is a privately held company with offices in Karlskrona and Gothenburg, Sweden. After years of research within the wave energy sector, the company started in 2017 to develop the InfinityWEC concept, a point absorber type wave energy converter.

InfinityWEC is:

- **Efficient** - Breakthrough power take-off ensuring maximum power output from every wave.
- **Reliable** - Holding the buoy submerged through the crest of large waves to secure survival and to enable continued power production also in the harshest wave conditions.
- **Scalable** - Proven subsystems, produced, assembled, and installed efficiently, allowing large scale roll-out. Highly recyclable.
- **Ideal partner for Wind & Solar** - Producing power at different times, improving balancing of electricity supply and demand. Shared infrastructure and operational costs.
- **Low Levelized Cost of Energy (LCoE)** – On track towards 100 EUR/MWh in early stage and <35 EUR/MWh long-term, highly competitive compared to all other energy production.

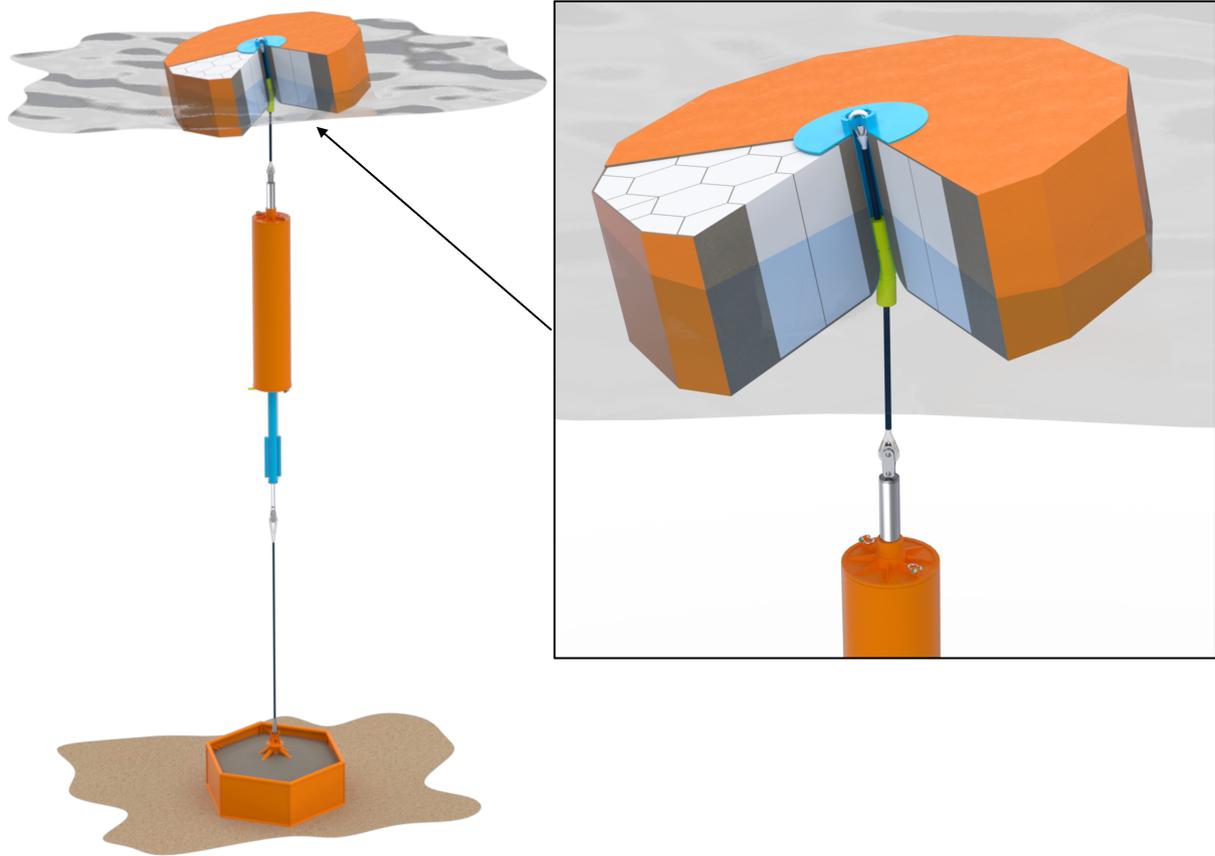
What makes InfinityWEC competitive is the advanced power take-off system, using a combination of ball screw actuators and a hydraulic pre-tension system (proven technologies) to provide instant force control with high efficiency. This enables the use of reactive force control to maximize the energy output in every individual wave. A unique survival function holds the buoy submerged through the crest of large waves, protecting the system from excessive load and enabling power to be produced also in the most severe wave conditions.

InfinityWEC is engineered for sustainable large-scale production and effective logistics. The power take-off is an innovative combination of proven subsystems. InfinityWEC's prime mover (buoy), is made of concrete casted with locally sourced materials at the installation site in a process common in civil engineering, eliminating long transportation of materials. A special high strength and sustainable concrete mix is being developed in collaboration with RISE Research Institutes of Sweden, enabling a prime mover with equivalent weight to a conventional steel hull, at 1/4 of the cost and 1/3 of the CO2 footprint.

The excellent performance and reliability, combined with a modular design where all critical parts are easily constructed, transported, installed and maintained, make InfinityWEC a very competitive solution for the future global energy market.

The market for InfinityWEC ranges from utility-scale wave farms to off-grid power supply, for island communities, green hydrogen production and other offshore industrial installations such as oil & gas and aquaculture.

Read more: oceanharvesting.com



InfinityWEC wave energy converter with the novel high-strength concrete buoy connected to the PTO system