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mWave ™

The Challenge

Wave energy faces two critical challenges:

1. Delivering cost effective energy
2. Surviving harsh storms

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The Next Generation of Wave Energy

Conventional wave energy converters have focused on extracting power from the oceans surface. These converters must be engineered to survive the harshest ocean storms, increasing design complexity and capital costs.

More than 80% of wave energy is accessible 10 meters below the surface. This has created an opportunity for a low cost, high power wave energy converter to operate on the sea floor.

The Solution

Bombora's mWave harnesses the vast potential of wave energy in the form of pressure on the sea floor. This greatly reduces the risks associated with surviving extreme storms and enables a simpler and more cost effective design.

How we're different

Invisible - More power in more places

The mWave operates well below the water's surface, deep enough for most recreational vessels to freely travel over. The mWave can be placed in many more locations than conventional surface wave energy converters. This enables more converters to produce more

Productive - Instant response = maximum energy harvest

The mWave's lightweight membrane is highly responsive to the full range of wave periods and wave heights enabling it to produce more power in a greater range of sea conditions. The mWave utilises pumped air to harness wave energy,

power closer to where the energy is needed.

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maximising energy extraction in all types of waves. This is a significant advantage over other wave energy converter designs.

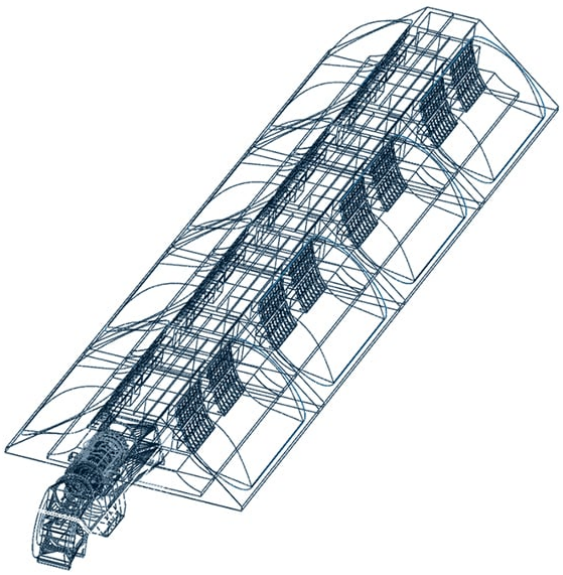
Reliable - No external parts

The mWave has no exposed moving parts. Our robust rubber membrane extracts power simply without complex mechanisms greatly reducing maintenance requirements. Our replaceable modular design streamlines maintenance, minimising downtime and maximising power output.

Intelligent - Active Survival Modes

Operating on the sea floor provides inherent protection during extreme storm events. The resilient mWave converter also has the unique ability to shut down in extreme storm events. Deflating the mWave of air allows the converter to be progressively detuned to safely extract power or completely shut down. Limiting the loads reduces capital costs and improves the all important cost of electricity.

The Technology



How it Works

The mWave features a series of air-inflated rubber membranes mounted to a concrete structure on the sea floor, all arranged at an angle to the incoming waves. As waves pass over the mWave air inside the membranes is squeezed into a duct and through a turbine. The turbine spins a generator to produce electricity. The air is then recycled to reinflate the membranes ready for the next wave.

The Membrane Pump

The inflatable rubber membrane covers a concave cell creating an air filled volume. As a wave passes overhead air is pumped out of the cell. The cell is refilled once the wave has passed. The flexible membrane is made from reinforced industrial grade rubber. Similar materials are

already used in a range of marine applications with good performance and durability.

Turbine and Generator

Air delivery from the membrane pump into the delivery duct is controlled by check valves to create one-way air flow. Air is delivered into a unidirectional flow turbine improving energy extraction and efficiency. A variable-speed generator converts this rotation directly into electricity.

Power to Grid

Electricity from the generator is transferred to the shore via a sub-sea cable. Following a process of power conditioning the electricity is delivered into the local grid.

Watch the mWave in Action

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