

Invisible Wave Energy Converter Powering Your City

Wave & Tidal Energy Network

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Press Media

INVISIBLE WAVE ENERGY CONVERTER POWERING YOUR CITY

Blessed with seemingly endless coastline, it is perhaps not surprising that one of the most cost competitive wave energy converter designs was inspired and developed in Western Australia.

Staring out at the vast Indian Ocean, engineer and passionate renewable energy advocate, Glen Ryan was determined to find an economically viable way to harness the ocean's energy by optimising both its kinetic and potential energy motions, without creating visual pollution.

INVISIBILITY

A sea floor based system was essential for invisibility, so the engineer set to work experimenting with various alternative designs in a home-made testing tank back on the family farm, a few hundred kilometres inland.

Move forward 10 years and Bombora Wave Power's first full-scale 1.5MW mWave is due for deployment in Peniche, Portugal in 2017. The site will eventually house 40 devices, capable of producing 60MW for the grid.

Bombora's Chief Executive Officer, Sam Leighton, explains *"The device has evolved since its founder's early inspiration but retains the essential characteristics of being 'invisible' from the surface whilst maximising power output."*

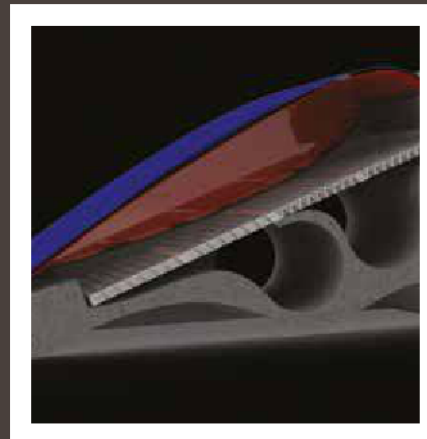
COST OF ENERGY STUDY

Sam added *"The recent cost of energy study completed on the mWave using data from our mid-scale device in Perth, Western Australia, suggests a full wave farm of 40 will produce energy at the same cost as an equivalent offshore wind farm or solar array by 2023."*

HOW IT WORKS

The fully patented device is made up of a series of air-inflated rubber membranes mounted to a concrete seafloor structure, arranged at an angle to the incoming waves.

As waves pass over air inside the membranes is squeezed through a duct into a turbine. The turbine drives a generator producing electricity, and the air recycles to reinflate the membranes ready for the next wave.



perfecting their technology to reach the final design. Their focus on producing a high output, low impact, invisible wave energy converter has led to some innovative design features...

- **Survivability** – the survivability of the device is a unique differentiating factor. Its durable industrial materials have been used in the marine industry over many years and with no external moving parts, maintenance is also greatly reduced.
- **Responsiveness** – the device's lightweight membrane design is highly responsive to varying wave heights and wave periods, enabling it to produce more power in a greater range of sea conditions. Utilising pumped air to harness wave energy maximises energy extraction in all types of waves, an advantage over other converter designs.
- **Maximum Power** – the device utilises a more efficient unidirectional flow turbine design to maximise power extraction. A variable-speed generator then converts this rotation into electricity.

Bombora Wave Power

INNOVATIVE DESIGN FEATURES

With the help of some of the industry's top experts and funding from research grants, private investors and design awards, Bombora has spent eight years researching and

