

Climate policy chaos sends wave energy pioneer Carnegie Wave to Cornwall

Dec 9 2016 at 4:32 PM Updated 14 mins ago



Wave, solar and energy storage combine to power Garden Island off the Western Australian coast south of Perth in a trial project by Carnegie Wave Energy. *Supplied*

A pioneering wave power company says it is building its first commercial wave plant in Cornwall, England because the policy support for renewable energy there is more enticing than the [climate policy chaos in Australia](#).

Mike Ottaviano, chief executive of ASX-listed [Carnegie Wave Energy](#), said the company was divorcing itself from political uncertainty over renewable energy in Australia by diversifying geographically and technologically.

Carnegie Wave had received "phenomenal" development aid from ARENA, the federal government clean energy funder, Dr Ottaviano said. But that one-off backing contrasted with broader support in Britain from start-up

to commercialisation.

This included state aid of about 60p for every pound spent by the company, twice the rate in Australia, a fat feed-in tariff of £310 (\$515) per megawatt hour, a "Wave hub" 20 kilometres offshore from St Ives, Cornwall connected to the national grid, manufacturers skilled in making new kit for wind farms, and support from the world's savviest renewable energy capital market in London.

CETO 6 – The Next Generation

Buoyant Actuator

- Provides the unit buoyancy
- Houses the Power Take Off (PTO) componentry
- Movement captures the energy of the waves



Hydraulic
Elements



Electrical
Elements



Power Take Off [PTO]

- Consists of the Pump, Pod and Hoses/Fluid Connection.
- The CETO Pump is the hydraulic cylinder that pumps fluid to and from the Pod.
- The CETO Pod is the system that will convert the hydraulic energy from the Pump into electricity.
- The Hoses connect the Pump to the Pod in order to transfer the fluid.

Tether

- Connects the Pump to the Foundation Connector.
- Consists of a synthetic, marine-grade rope with terminations at either end.

Quick Connect Fittings

- Adapted from existing offshore oil and gas fittings.
- Designed to lock into place, reducing the use of divers.
- Significantly speeds up installation.

Subsea Electrical System

- The subsea electrical system consists of multiple components:
- Export cable, transmits electricity back to Onshore Power House.
 - Junction box.
 - Umbilical.

Foundation

Quick Connect
Fittings

Umbilical

Junction Box
or Inline Connector

Export Cable

Onshore Power House
& Control System

Carnegie Wave Energy's CETO wave energy technology uses wave power to drive a turbine by moving a buoy up and down. **supplied**

"There's a really poor understanding in Australia of what it takes to commercialise power technology. The view in government would be that we support research and development [but] we are just doing one part of the chain, and it's all overlaid by this policy uncertainty in the climate space which affects everything," Dr Ottaviano said.

"We have not got a great track record of building out renewable energy in Australia. The average banker or broker here doesn't understand renewable energy."

Britain and Europe "understand how to commercialise new power technology", he told *AFR Weekend*. "They just make it so easy for a company like us to commercialise renewable energy technology."

The saga shows how the Turnbull government's climate policy bumbling is sabotaging its innovation policy in a field in which Australia should have natural advantages.

Prime Minister Malcolm Turnbull this week [ruled out emissions trading despite being advised it is the cheapest route to a lower carbon emissions energy system](#). The government has set up an oil, gas and energy "industry growth centre", but its [current fact sheet doesn't mention renewable energy](#).



Solar array for CSIRO's Square Kilometre Array radio telescope at the Murchison Radio-Astronomy Observatory in Western Australia. *Supplied*

Carnegie Wave, which counts among its shareholders AFL chairman Mike Fitzpatrick's 88 Green Ventures, is trialling a single one-megawatt wave power unit operating off Garden Island, just south of Perth, with a 2MW solar array, a 2MW/0.5MWh battery and a desalination plant. The navy buys power and water from the system, which is funded by \$13 million in state aid via Arena.

The company has also just received a £9.55 million grant from the European Regional Development Fund for the first 1MW unit of a much larger wave power plant off the coast of Cornwall, near St Ives. The 15MW second stage will be funded commercially off the back of the feed-in tariff, Dr Ottaviano said.

Bumbling along

To earn cash while it is commercialising wave power, Carnegie Wave has bought the two-thirds of [solar-battery microgrid integrator Energy Made Clean that it didn't own](#). EMC's most notable project is a 1.6MW solar farm with 2.4MWh of battery storage to power [CSIRO's Square Kilometre Array](#) at the Murchison Radio-Astronomy Observatory in Western Australia.



Carnegie Wave Energy managing director Michael Ottaviano, Carnegie director and shareholder Michael Fitzpatrick and Energy Made Clean managing director John Davidson. **Supplied**

Dr Ottaviano said wave energy provided predictable power and could mitigate the intermittency of wind and solar energy – which has helped to destabilise South Australia's electricity system.

But he said Australia still had no energy strategy a full decade after he had represented emerging energy technologies on a committee advising then energy minister Ian Macfarlane.

"We are just bumbling along at a time of the most disruptive change in the energy system."