

## **ASX Announcement**

**26<sup>th</sup> February 2015**

Please find attached presentation delivered today at Renewable UK: Wave & Tidal Conference in Edinburgh by Carnegie's newly appointed CEO of its subsidiary, CWE UK, Mr Tim Sawyer.

For more information:

Dr Michael Ottaviano

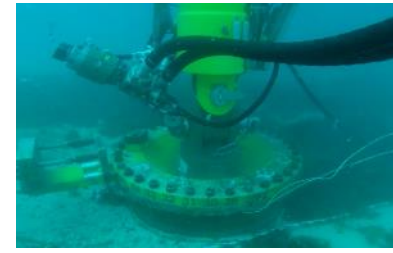
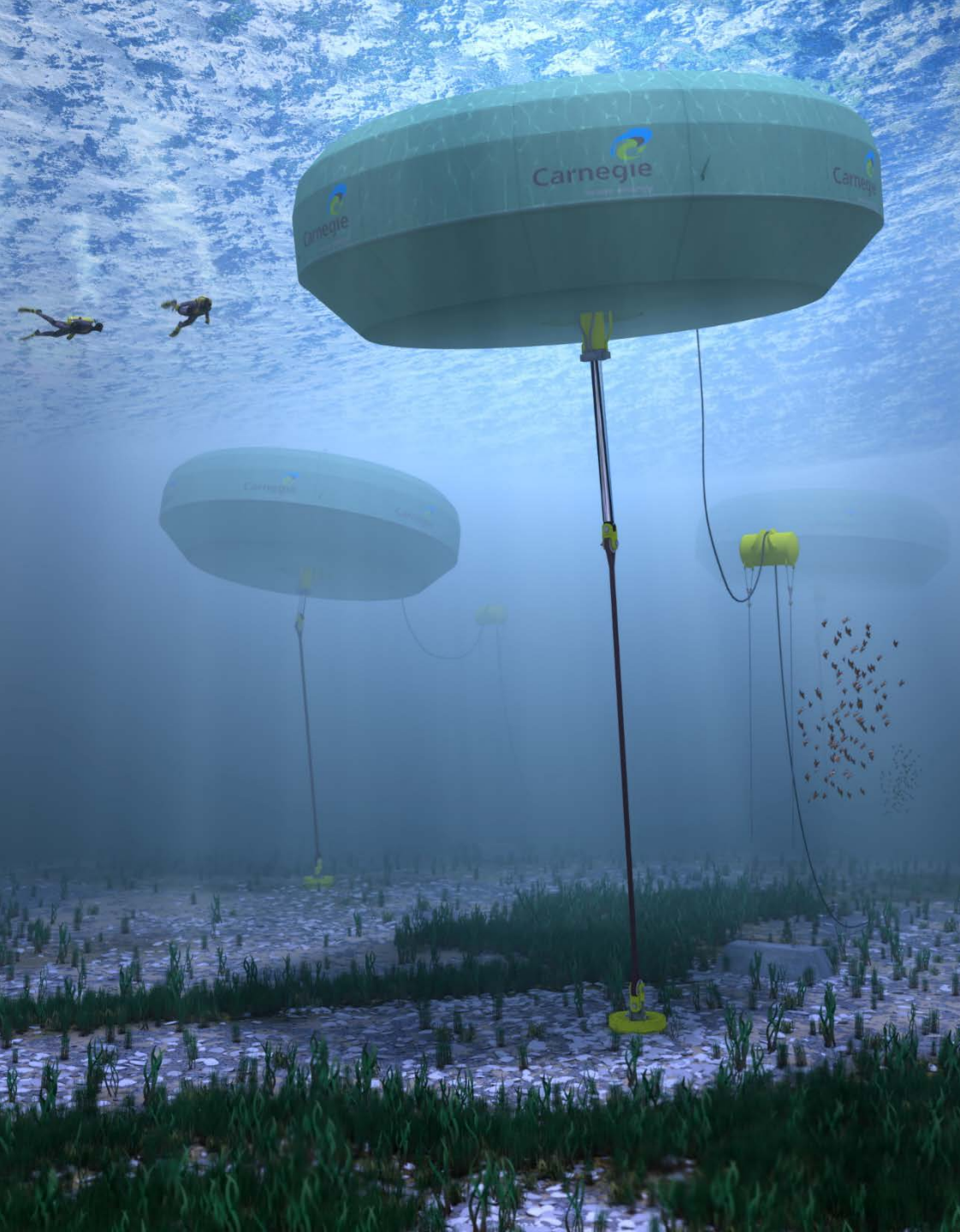
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## CETO Status Update

Renewable UK: Wave & Tidal

26 February 2015

*Tim Sawyer*

*CEO, CWE UK*

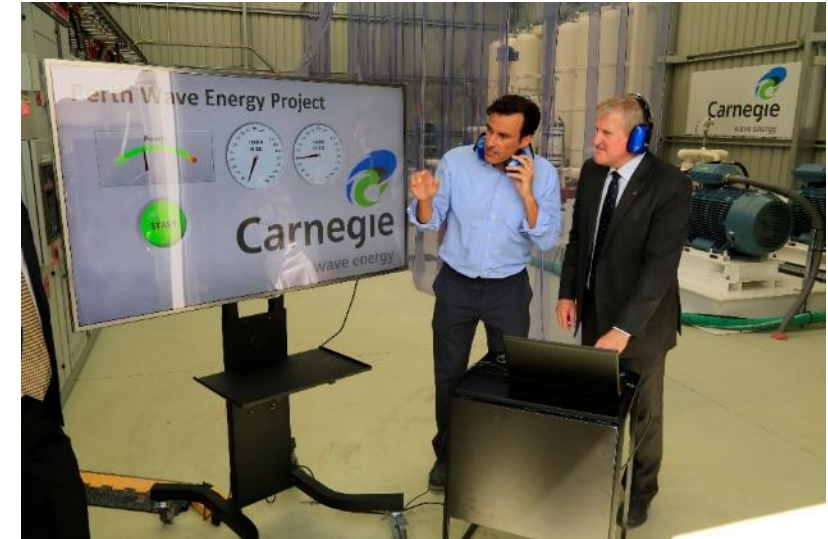
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# 2014/15 Key Achievements

## CETO 5 Perth Wave Energy Project

- ✓ Construction complete
- ✓ CETO unit #1 (2,350 hrs) and #2 (850 hrs) installed and operating
- ✓ Exporting power to grid
  - Unit #3 ready to deploy



## CETO 6 Development

- ✓ 1MW CETO 6 design unveiled
- ✓ \$20m CETO 6 CEFC debt facility
- ✓ \$9.5m CETO 6 capital raise
- ✓ \$11m CETO 6 grant





- Owner and developer of “CETO” wave energy technology
- 40 engineering, commercial, administration staff
- ASX listed, based in Fremantle, Western Australia
- Subsidiaries in UK, Ireland & Chile
- 120 Patents or patents pending globally
- \$100m spent to date on CETO
- EDF (Électricité de France) is a CETO power licensee

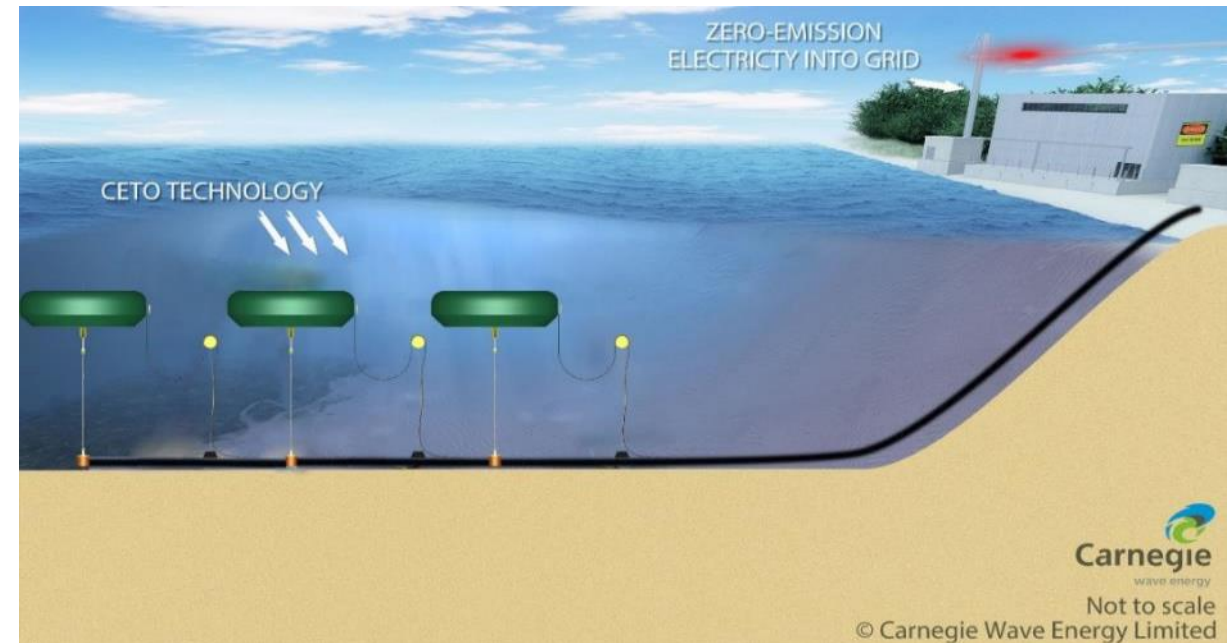


# CETO Technology

- Fully submerged, point absorber
- Near-shore location or deep-water location
- Onshore or offshore power production
- Onshore water production
- Modular design largely using proven subsea components



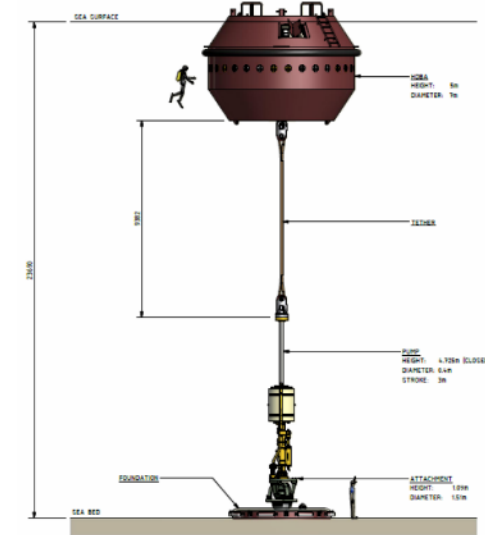
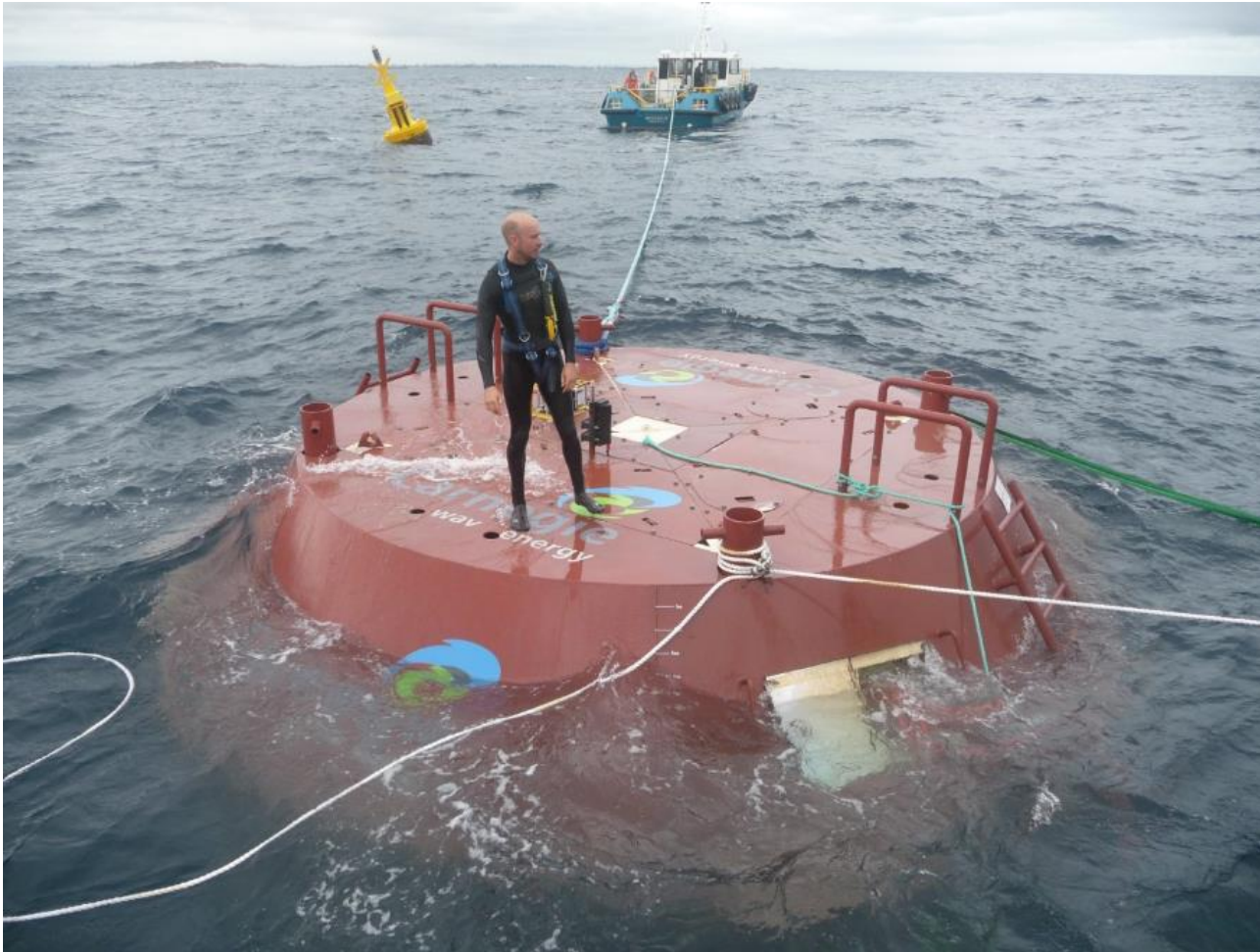
*CETO 5 - Near-shore, onshore power & water*



*CETO 6 - Deepwater, offshore power production*

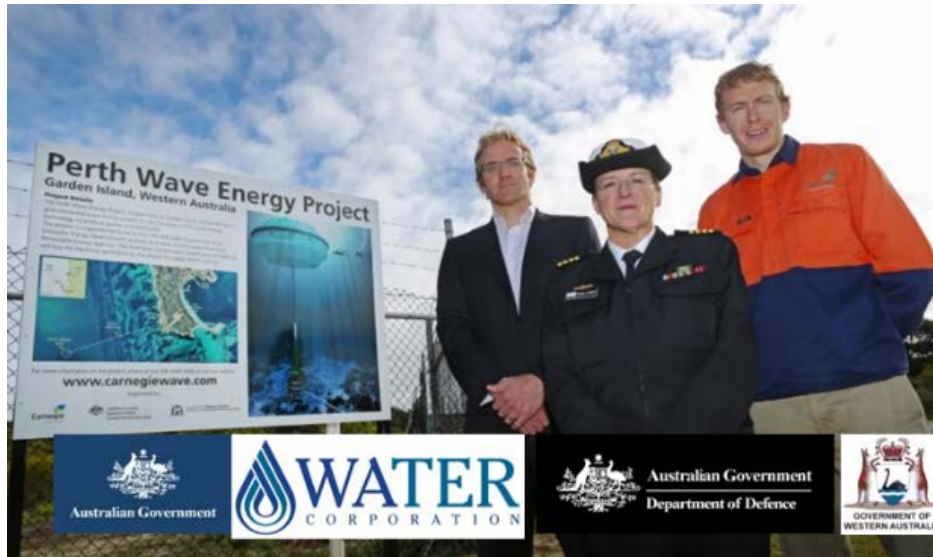


# Track record of ocean testing – 80kW prototype



# Perth Wave Energy Project

- Garden Island, Western Australia
- 3 x 240kW CETO 5 units
- Onshore power plant and grid connection
- Onshore reverse osmosis desalination pilot plant
- \$22m in Government grant funding
- Power & Water Offtake to Australian Department of Defence (HMAS Stirling)









# Perth Wave Energy Project – foundations and pipelines





# Perth Wave Energy Project – onshore plant

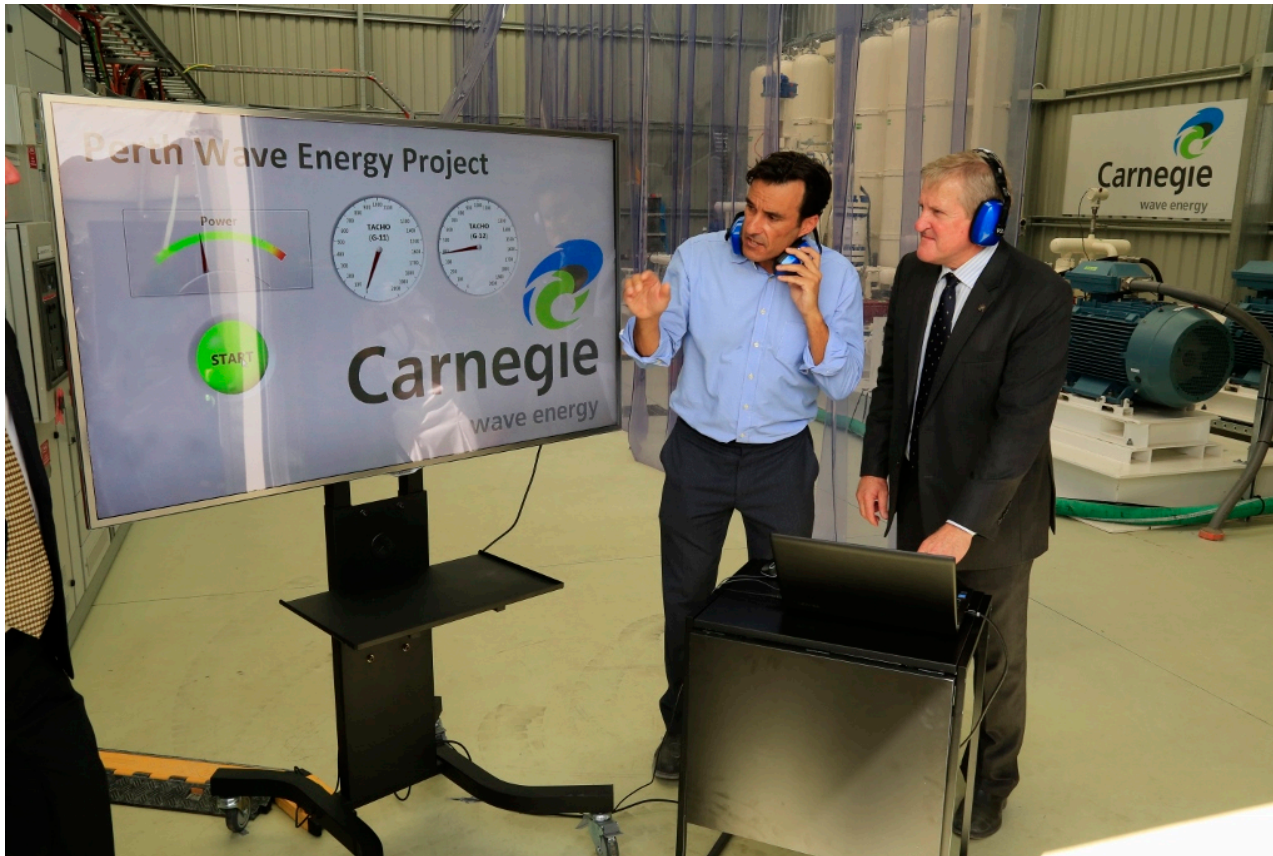




# Perth Wave Energy Project – assembly and testing



# Perth Wave Energy Project – operational



*Australian Minister for Industry & Science, the Hon Ian Macfarlane  
“switching-on” the Perth Wave Energy Project*

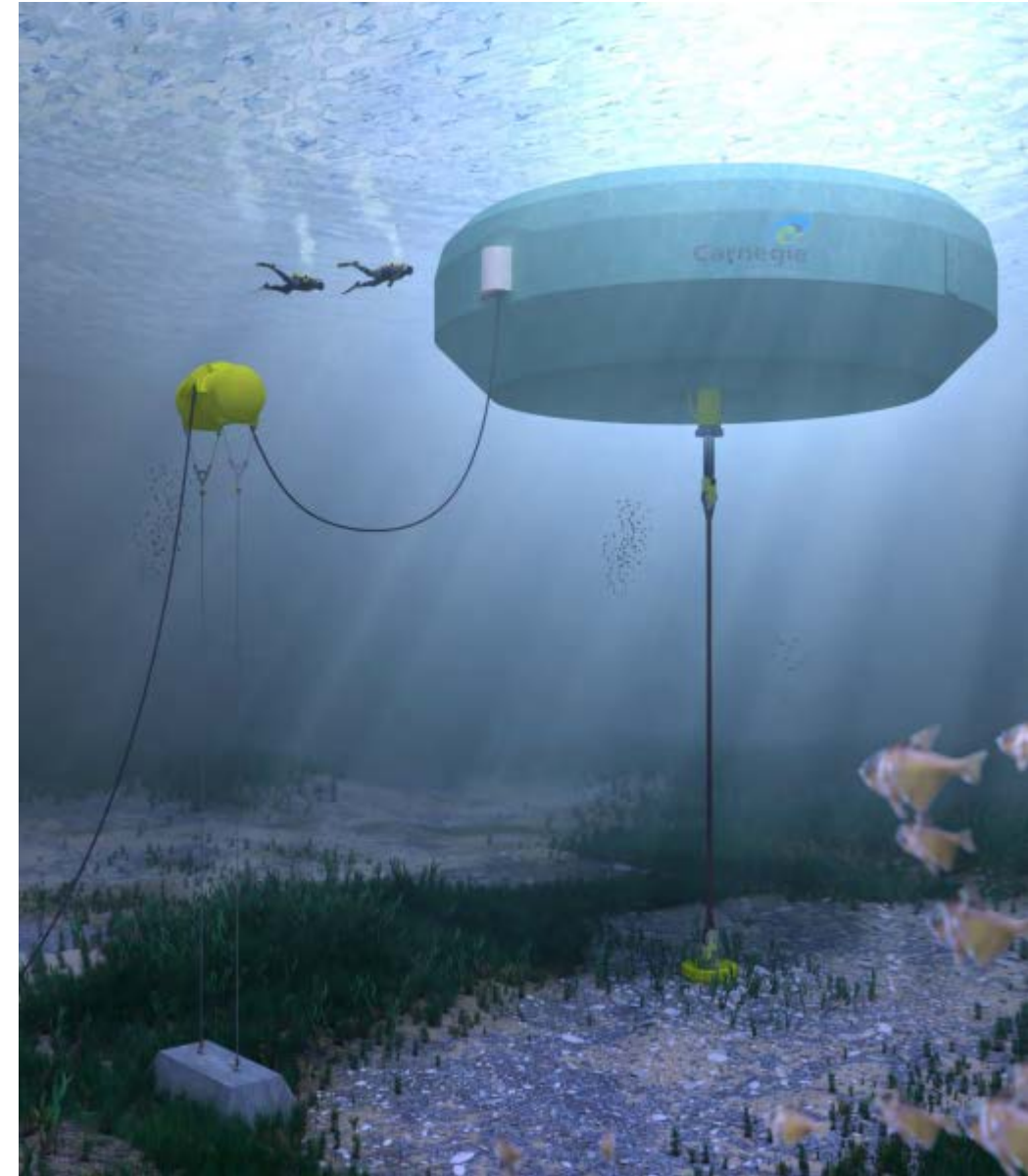


*2 x CETO 5 Units operating off Garden Island, Western Australia*



# CETO 6 Next Generation

- 1MW capacity target
- 4 x increase in rated capacity vs CETO 5 => ~50% increase in diameter
- On board power generation
- First commercial production design
- 3MW CETO 6 Project
- Location(s):
  - Garden Island, Western Australia
  - Wavehub, UK





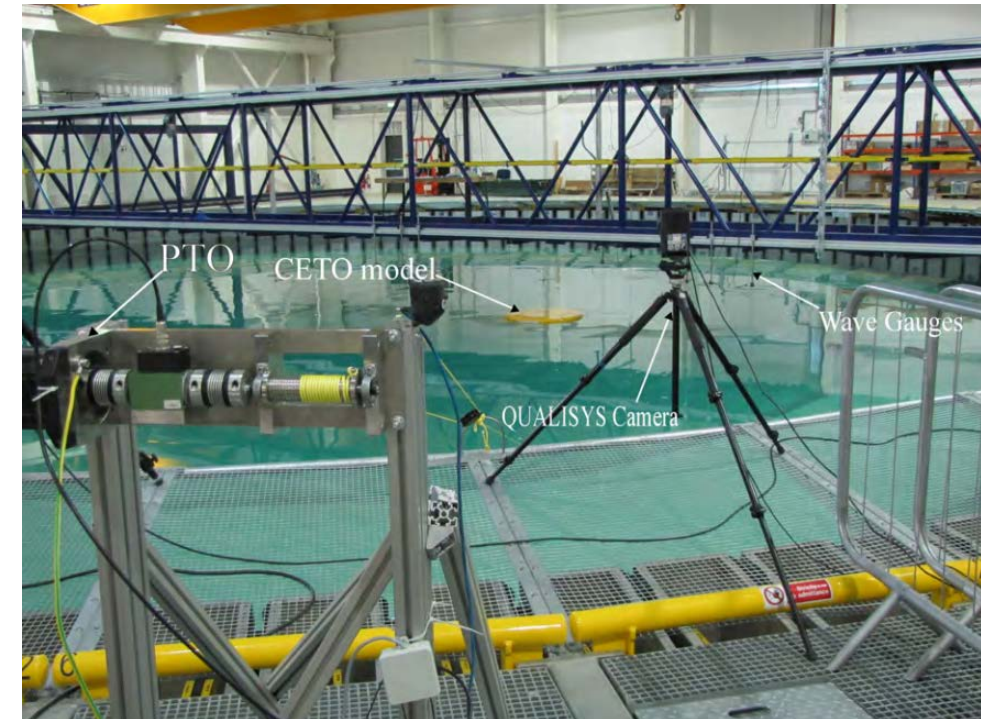
# CETO Wave Energy (CWE) UK

- Wholly owned subsidiary formed in Edinburgh 2013
- UK based CEO and experienced board of directors
- CETO projects & collaborative technology development
- Planned activities:
  - Collaborative R&D activities
  - 3MW CETO array project
  - 10MW CETO array expansion



# CETO 6 Wave Tank Testing

- FloWave Ocean Energy Testing Facility, Edinburgh
- Objectives:
  - Understand the performance of CETO6 under a range of operational conditions
  - Implement CETO advanced tuning strategies
  - Validation of loads under varying conditions
  - Validate Carnegie's extensive numerical modelling
- Excellent agreement with numerical modelling, including power output and improved performance through advanced tuning



# Upcoming Milestones



2014:

- ✓ Construction & operation of the Perth Project
- ✓ CETO 6 project design and funding

2015:

- ✓ PWEF Construction Complete
- ✓ PWEF Grid Connection & Operation
- Desalinated water production
- CETO 6 technology development

2016/17:

- Construction of 3MW CETO 6 project (Western Australia & UK)

