

ASX Announcement

March 7, 2016

Carnegie Wave Energy Roadshow Presentation

Please find attached the *Carnegie Wave Energy Roadshow* presentation delivered by Carnegie Managing Director and CEO, Dr Michael Ottaviano, on Friday March 4 in Perth with Sydney and Melbourne to follow on March 7 and March 8 respectively.

For more information:

Dr Michael Ottaviano

Managing Director

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Carnegie Wave Energy Limited
(ASX:CWE)

Dr. Michael Ottaviano
Managing Director & CEO

Disclaimer

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Carnegie: A Global Leader in Wave Technology

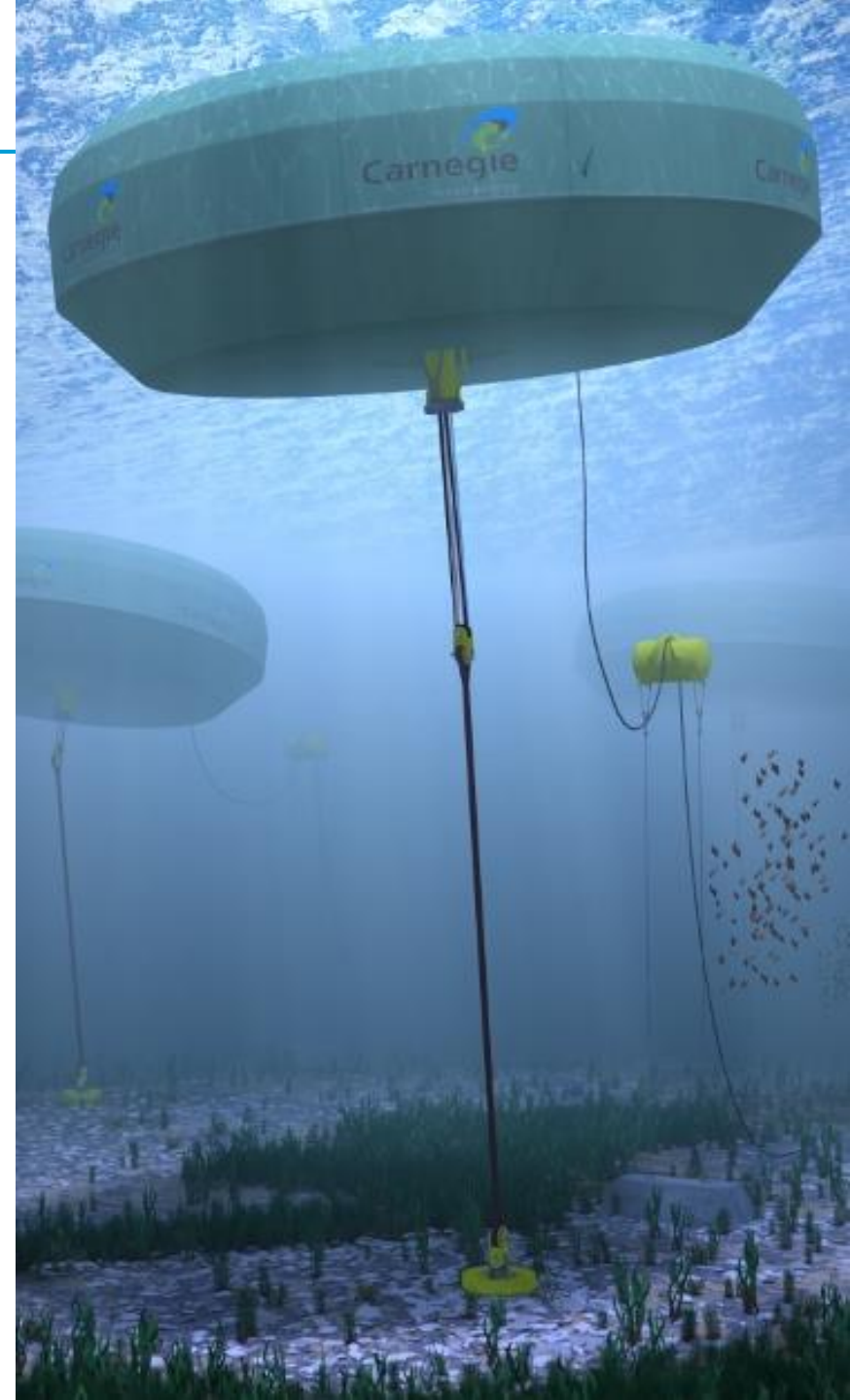
“Of the eight leading wave companies four have gone bankrupt, one was folded by its owner, one has scaled back its activities drastically, one has had serious setbacks and **one (Carnegie Wave Energy) has made considerable progress with its technology.**”

- Bloomberg New Energy Finance, 2016

Bloomberg
NEW ENERGY FINANCE

Investment Highlights

- Owner and developer of world leading “CETO” wave energy technology.
- Tens of thousands of in-ocean operating hours.
- Over \$100 million spent to date on CETO over six prototype cycles.
- Team of 45 focused on wave technology and project development.
- Well capitalised: \$20 million cash, \$19 million in undrawn Government grants, \$21 million undrawn debt facility.
- Dual market focus -
 1. Europe/UK:
 - Dedicated wave sites, grants, tariffs, wave resource, EDF license and supply chain.
 2. Islands:
 - High diesel tariffs, lack of energy security, wave resource, funding support.

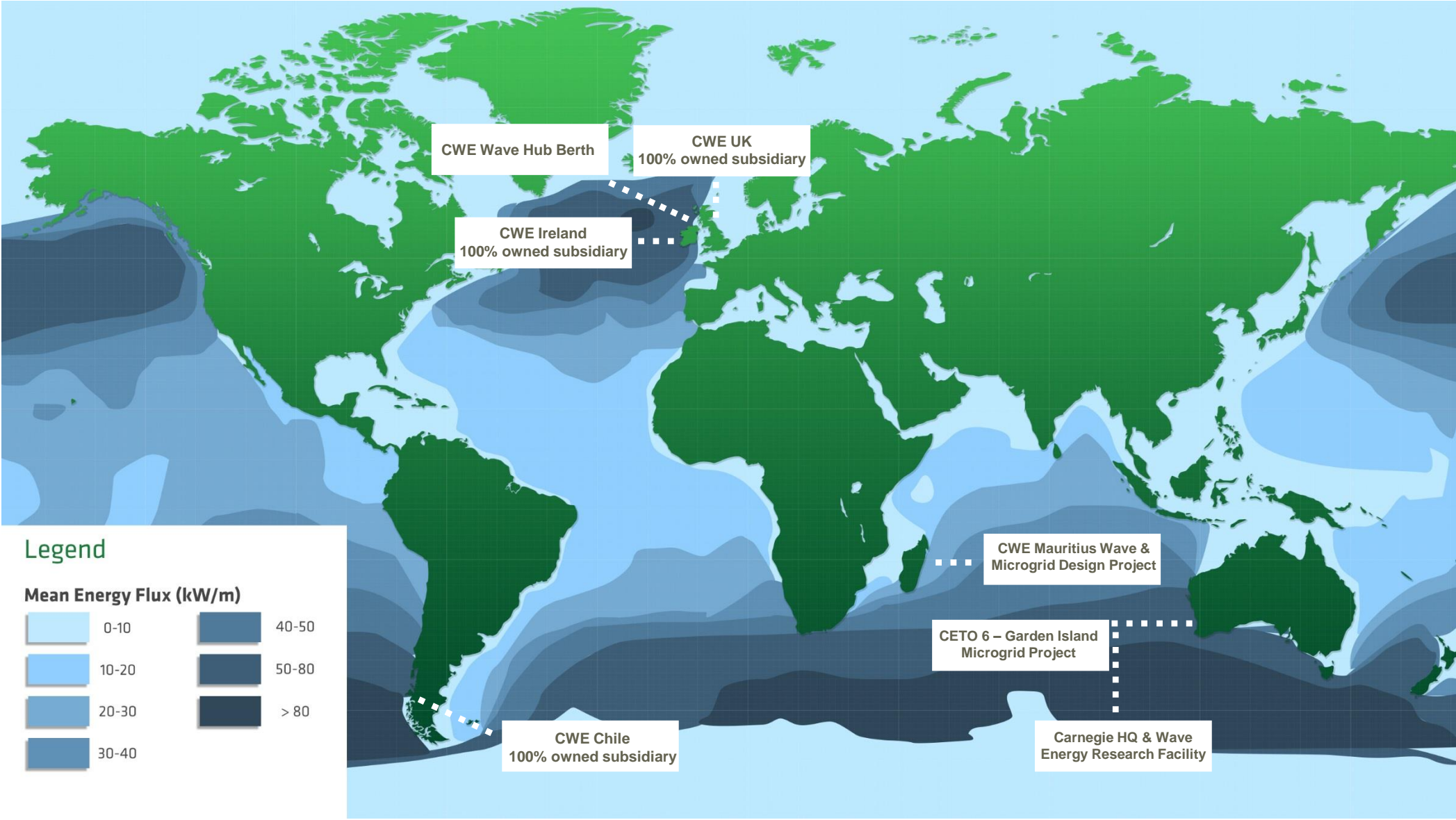


Board of Directors



L-R: Kieran O'Brien (ex ESB), Mike Fitzpatrick (ex Hastings), John Leggate (ex BP), Jeffrey Harding (Chairman, ex Pacific Hydro), Michael Ottaviano (MD & CEO), Grant Mooney (NED, Joint Company Secretary)

Global Reach



Industry Recognition & Global Awareness



Top 100 Global Sustainable Solutions, 2015



Clean Energy Council

Innovation Award Winner, 2015



Top 50 Most Innovative Companies in Australia, 2016



BANKSIA
SUSTAINABILITY
AWARDS 2015
CATEGORY FINALIST

Banksia Sustainability Awards,
Innovation Category Finalist,
2015



The Australian Innovation Challenge, Finalist,
Minerals & Energy, 2016



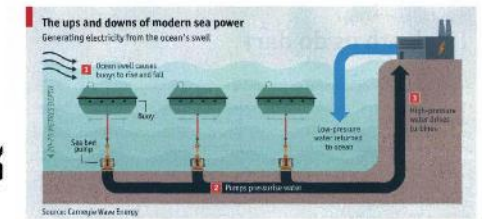
The New York Times

ENERGY & ENVIRONMENT

Catching Waves and Turning Them Into Electricity

By AMY YEE APRIL 22, 2015

MELBOURNE, Australia — Off the coast of Western Australia, three big buoys floating beneath the ocean's surface look like giant jellyfish tethered to the seafloor. The steel machines, 36 feet wide, are buffeted by the powerful waves of the Indian Ocean. By harnessing the constant waves, the buoys generate about 5 percent of the electricity nearby military base on Garden Island.



Renewable energy
Looks swell

MELBOURNE
A new project off the coast of Australia may make wave power a reality. NO LAND stands between Antarctica and Australia's west coast—just a vast ocean, rippled and rocked by the Roaring Forties. For centuries these westerlies, which blow between latitudes 40° S and 60° S, have whirled ships from Europe to America. Even below the surface, though, the swell is enough to generate power. Each buoy's rising and falling drives, as the diagram shows, a turbine attached to the sea-

BloombergView

ENVIRONMENT

Sea Power Can Eclipse Solar



MAR 19, 2015 1:20 PM EDT

Credible Alliances

ARENA



Australian Government
**Australian Renewable
Energy Agency**



Mauritius Research Council

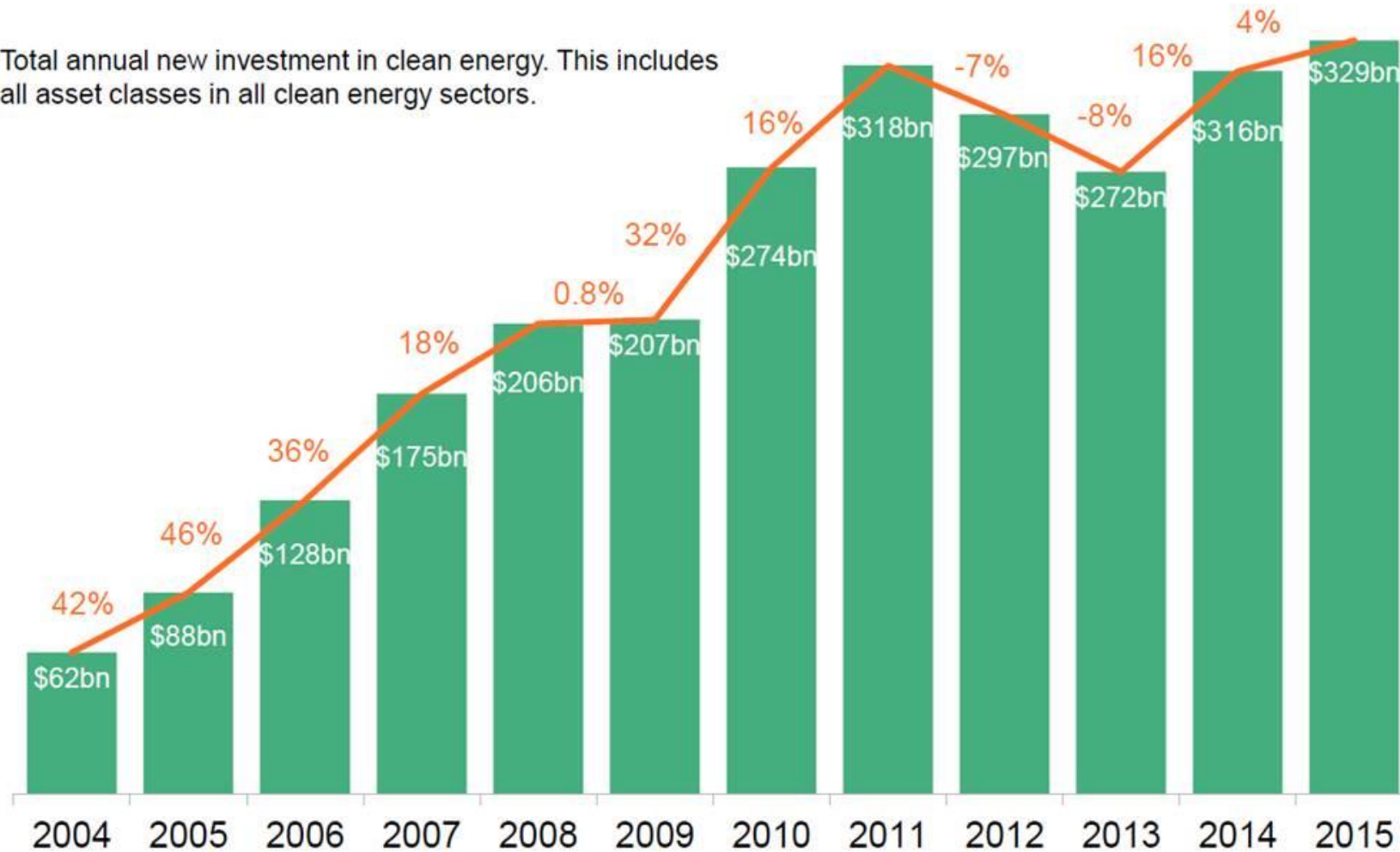


**GOVERNMENT OF
WESTERN AUSTRALIA**



Global Trends in Renewable Energy Investment

- Total annual new investment in clean energy. This includes all asset classes in all clean energy sectors.



Note: Total values include estimates for undisclosed deals. Includes corporate and government R&D, and spending for digital energy and energy storage projects (not reported in quarterly statistics).

Source: Bloomberg New Energy Finance

“Globally, renewable sources contribute **one** of every **two** megawatts of power.

“By 2030 the share of electricity generated by **renewable energy** will reach 50 per cent.”

- Ernst and Young, 2015



Global Trends in Renewable Energy Investment – Offshore Wind Example



- Hornsea offshore windfarm.
- World's biggest offshore windfarm to be built 120km off the north-east coast of Yorkshire.
- The multi-billion pound project is expected to power as many as one million homes in the region when complete.
- The 1.2GW project will be made up of 175 7MW wind turbines covering 400 square kilometres.
- Construction scheduled to start in 2018.
- Construction scheduled for completion in 2020 with an expectation to provide an annual production of around 4.1/TWh.
- Offshore wind prices expected to be £140/MWh in 2020.

An aerial photograph of the Perth Wave Energy Project, showing three wave energy converters (WECs) in the ocean. Each WEC consists of a small platform with a vertical structure, surrounded by a circular area of greenish water. The ocean is dark blue with visible wave patterns.

The Perth Wave Energy Project

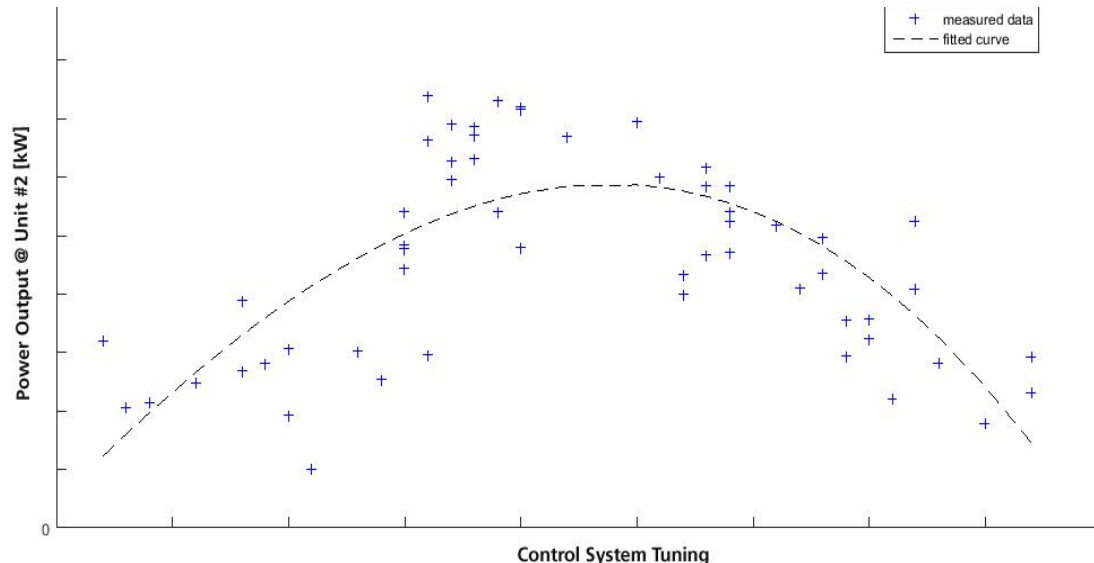
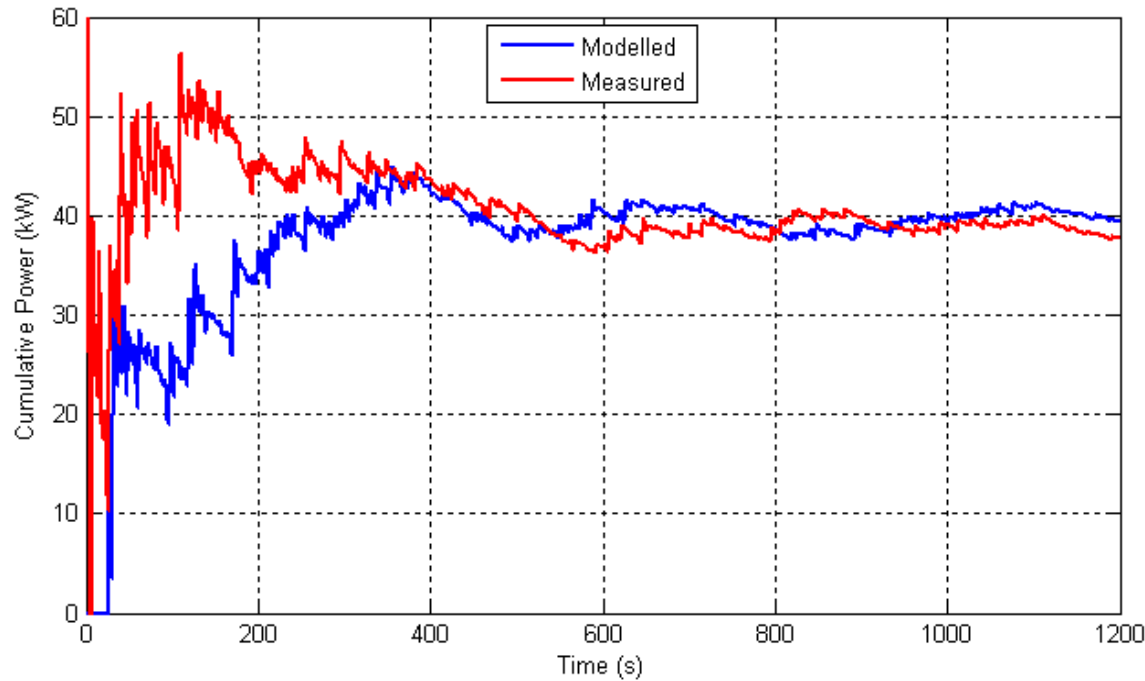
CETO 5

The Perth Wave Energy Project – CETO 5

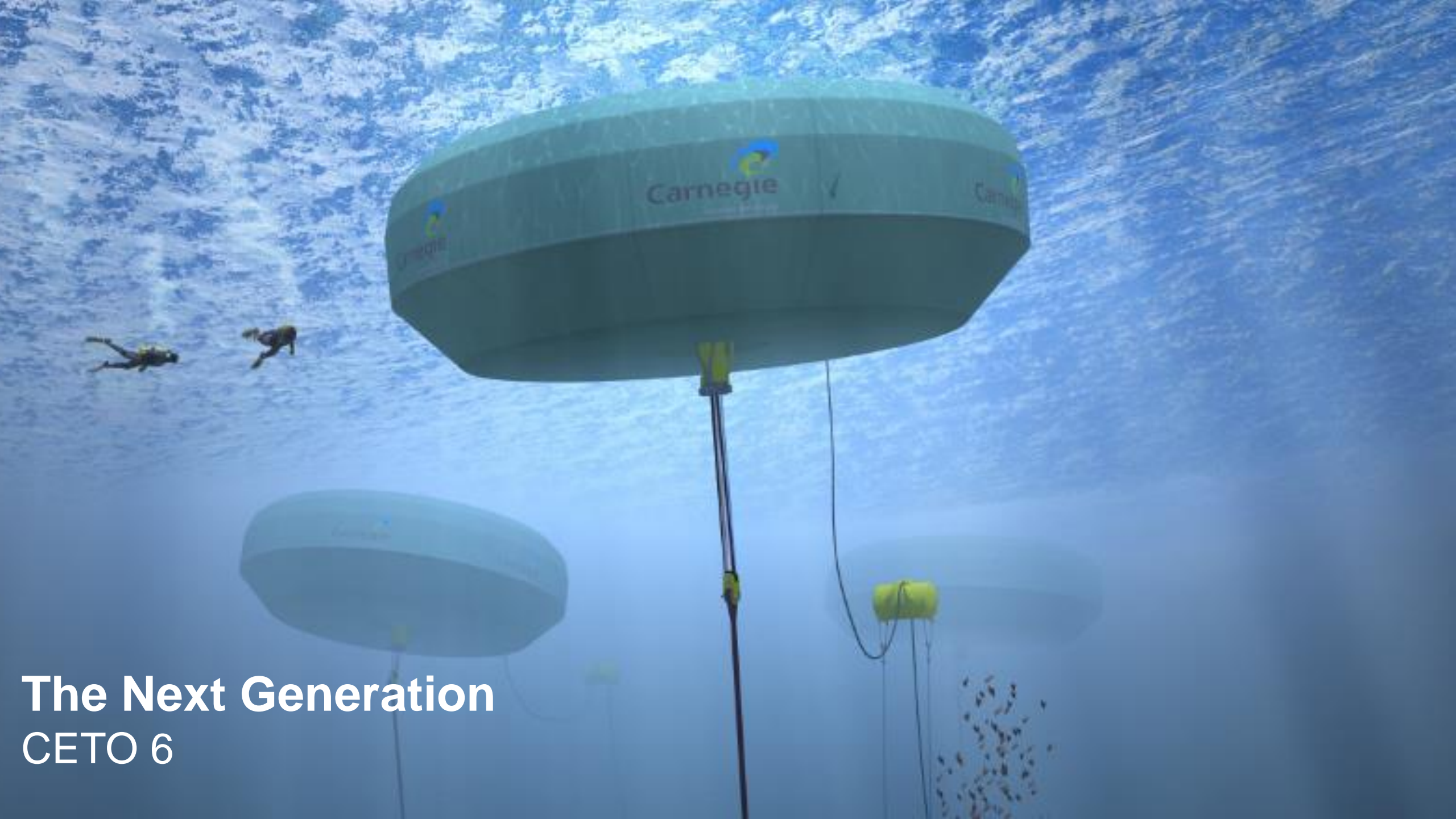


- Largest capacity CETO unit than any other CETO unit developed to date.
- First demonstration of a complete grid-connected CETO system anywhere in the world.
- Only wave project to consist of three units operating together in an array.
- Only wave project to project to produce both power and freshwater.
- Operated across 14,000 cumulative hours spanning four seasons.
- Verified CETO technology has minimal environmental impact.
- Measured CETO 5 results confirm modelled forecasts.
- Measured results confirm CETO 6 forecasts.

Perth Wave Energy Project – performance data analysis



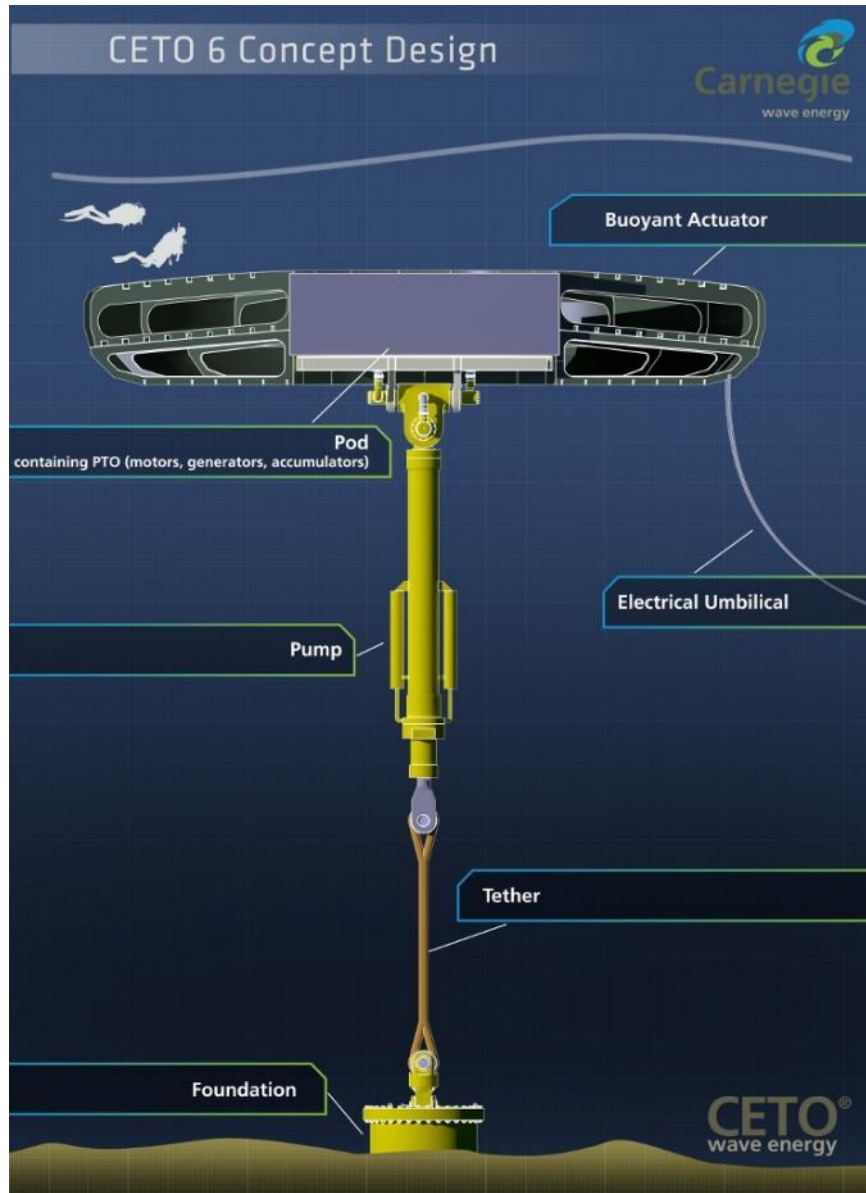
- Range of sea states experienced, including waves up to 5.8 metres.
- Three units array, over 14,000 of cumulative operation.
- 400 sensors and more than 2.5GB data daily.
- Strong correlation between power output, modelled and measured results (within <10% variance).
- Demonstrated effectiveness of WEC control strategy against sea states experienced.
- Independent review process of results.
- Learnings from PWEF fed into CETO 6 design.



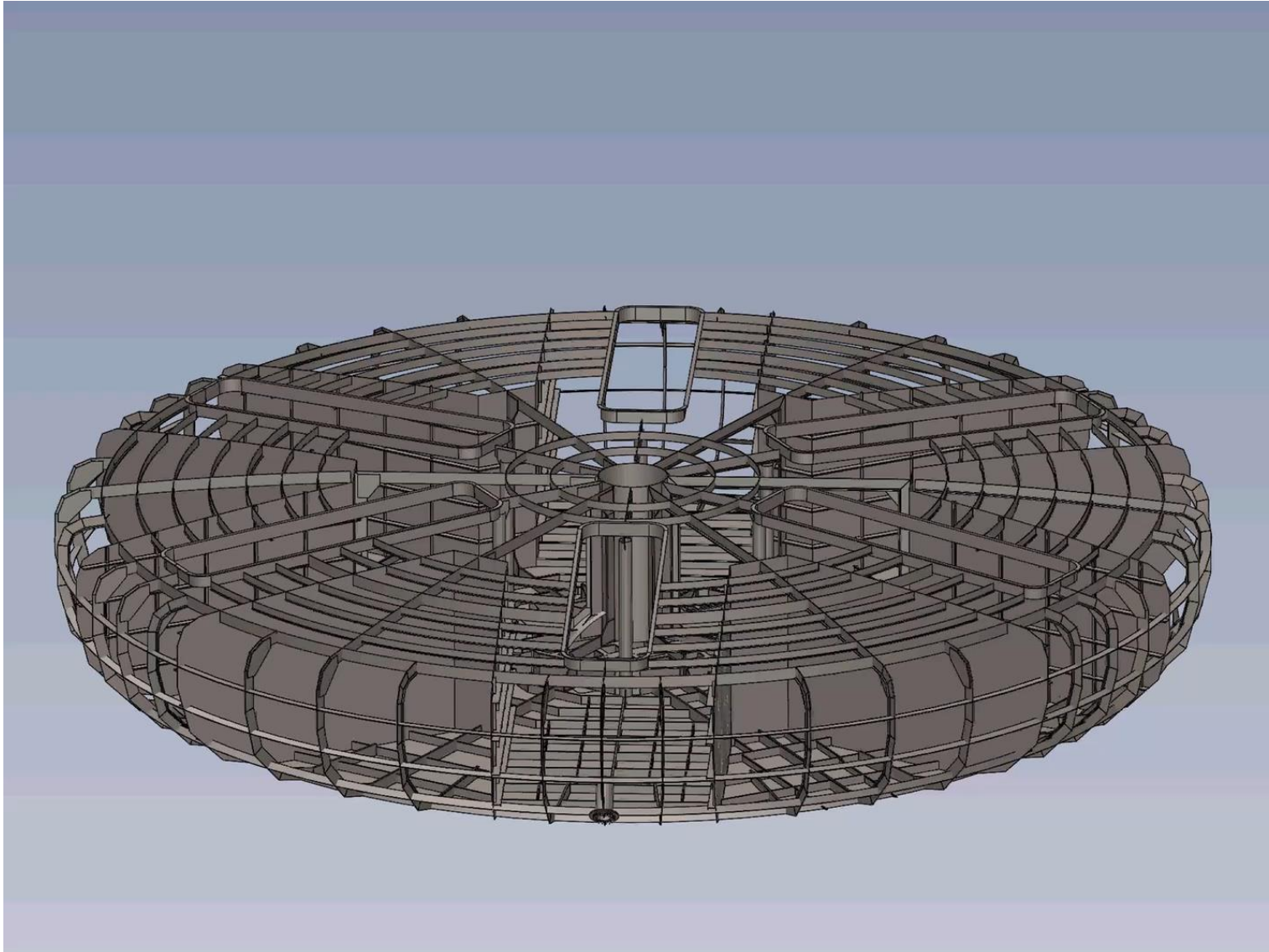
The Next Generation

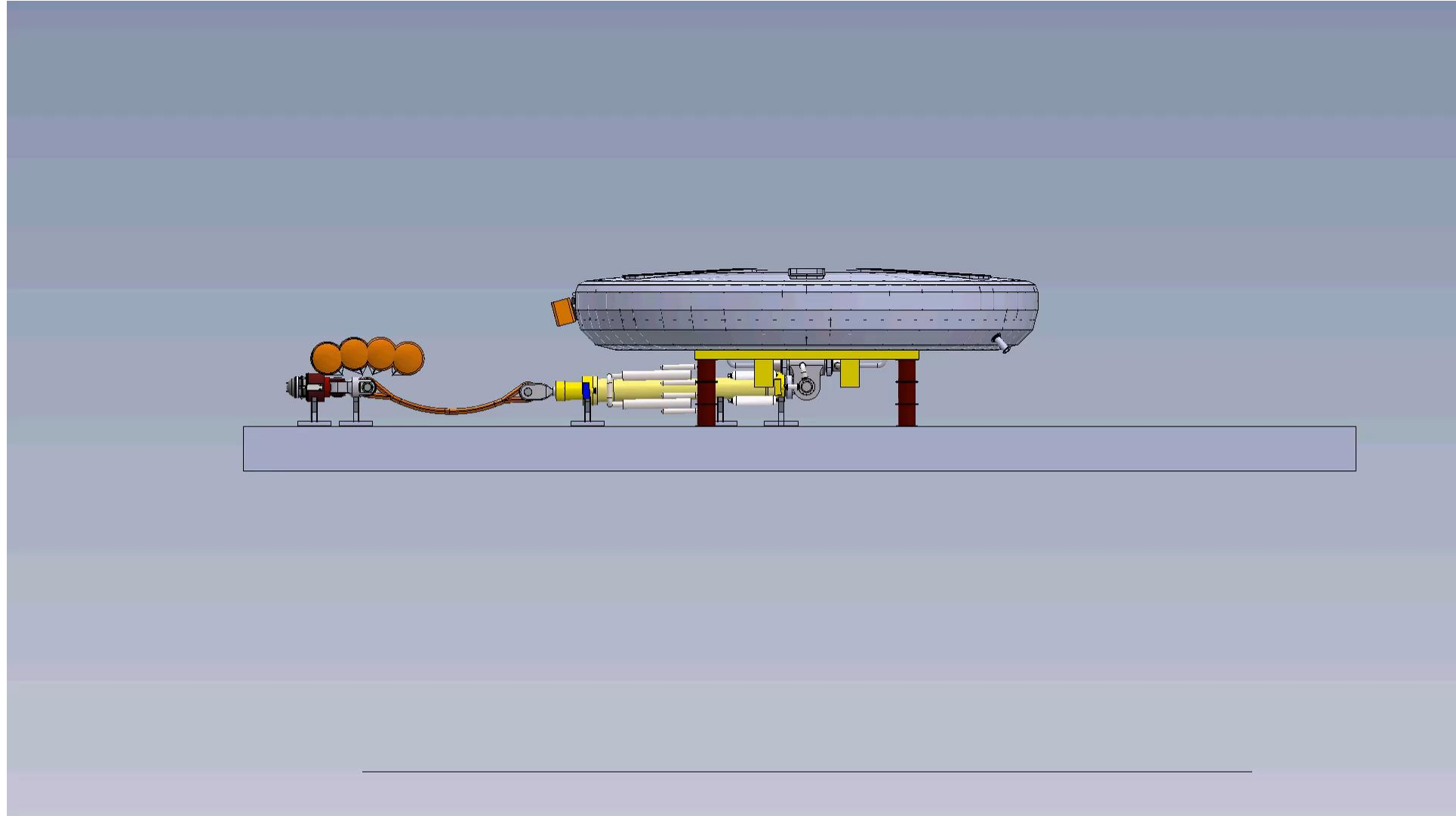
CETO 6

CETO 6 – Commercial Product Platform

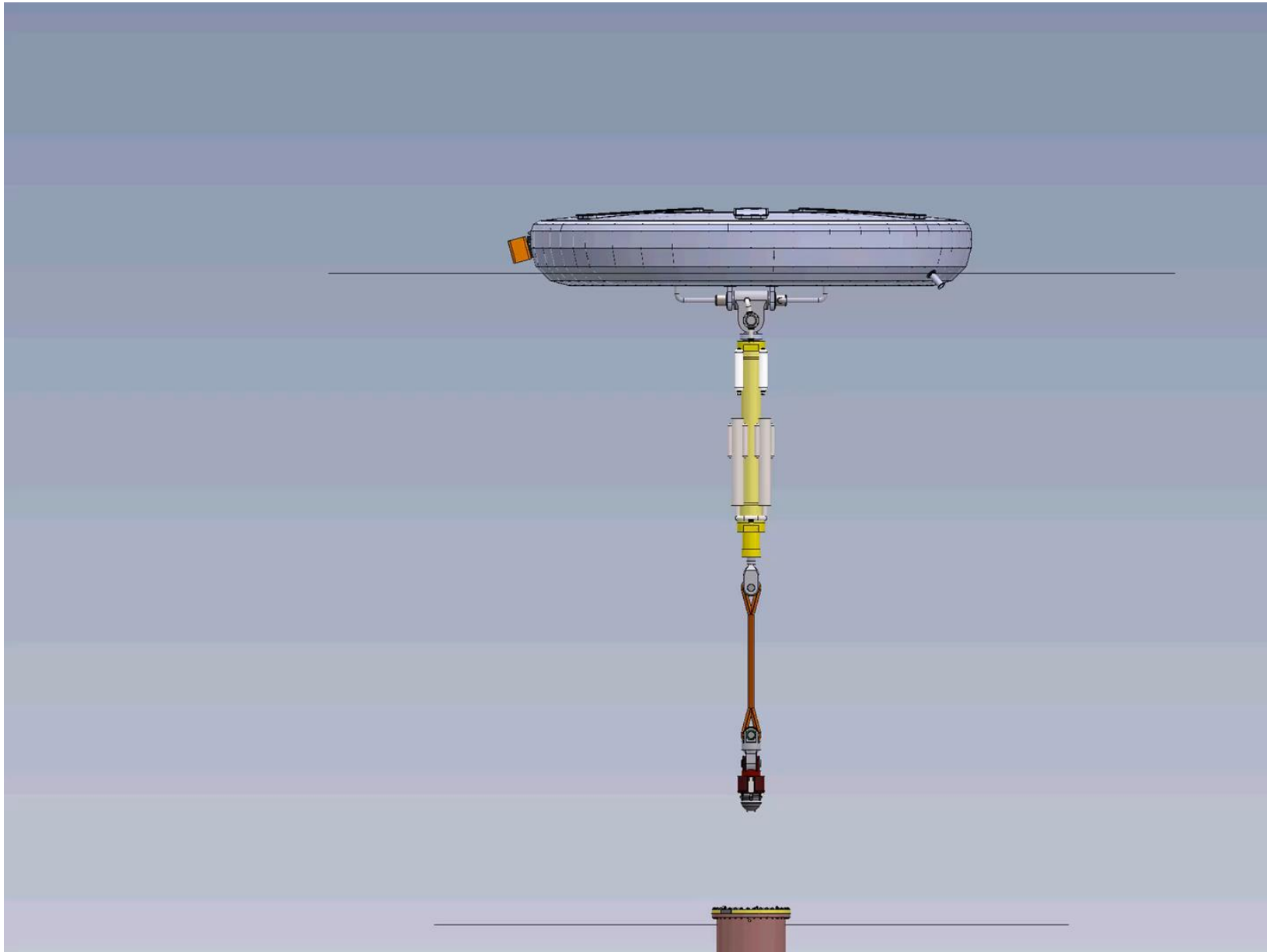


- Development based on:
 - CETO 5's in-ocean operational hours and data analysis.
 - CETO 6 wave tank testing at FloWave, Edinburgh.
 - Internal modelling and design development.
 - Engagement with UK/EU and Australian supply chain.
- Approx. four times the output of CETO 5.
- Power generation inside the buoyant actuator allows more advanced control capability.
- Rapid installation and retrieval (no offshore heavy lifts).
- Electrical export cable delivers power onshore avoids hydraulic transmission losses.
- Tidal range compensation.
- Nearshore and more distant to shore wave sites suitable.





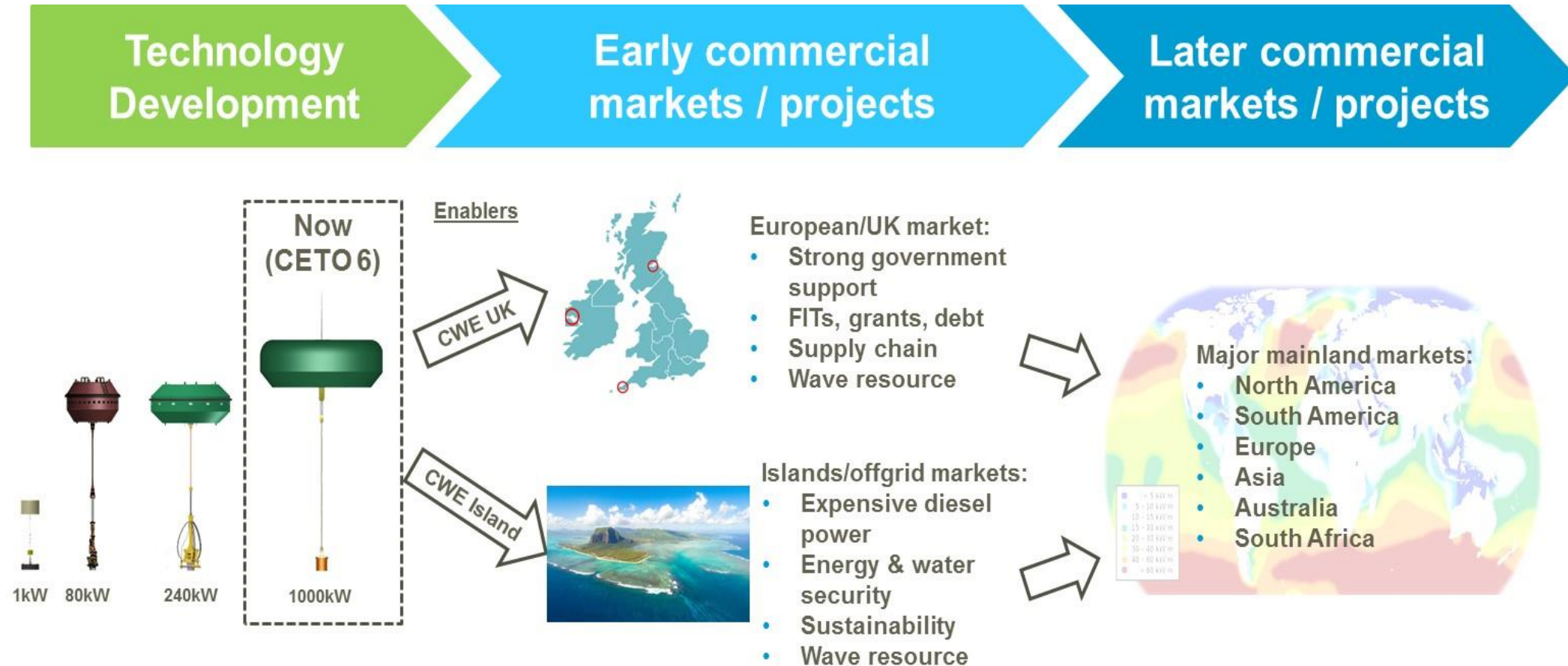
CETO 6 - Pump Extends to Install Unit





Commercialisation Strategy

Commercialisation of CETO – UK/EU and Islands



Commercialisation via two key initial markets:

- UK/EU: taking advantage of sites, funding, tariffs and supply chain.
- Islands: taking advantage of high power tariffs, competitive advantage of wave (consistency and footprint).

International Market – UK/EU

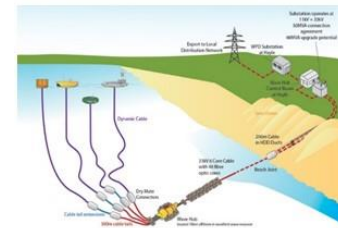
- Multiple, dedicated wave energy sites across UK/EU either in operation or in development with a total potential capacity approaching 100MW.
- Dedicated wave energy tariff support, grants, debt facilities available.
- Experienced supply chain for manufacturing, assembly, installation and maintenance.
- Carnegie now very active in the UK:
 - CWE UK subsidiary.
 - Locally based CEO and Directors.
 - Wave Hub berth.
 - Extensive R&D activities.
 - Deep supply chain engagement.
- First deployment of CETO 6 post Garden Island will be in UK and as part of a 10-15MW project.



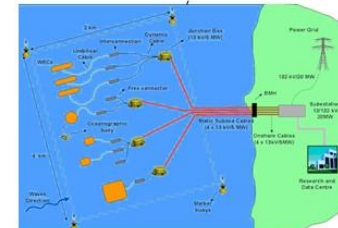
EMEC, Scotland



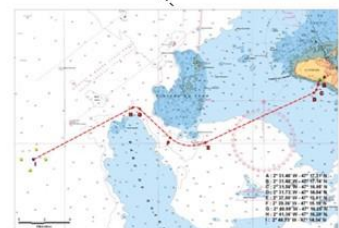
Westwave, Ireland



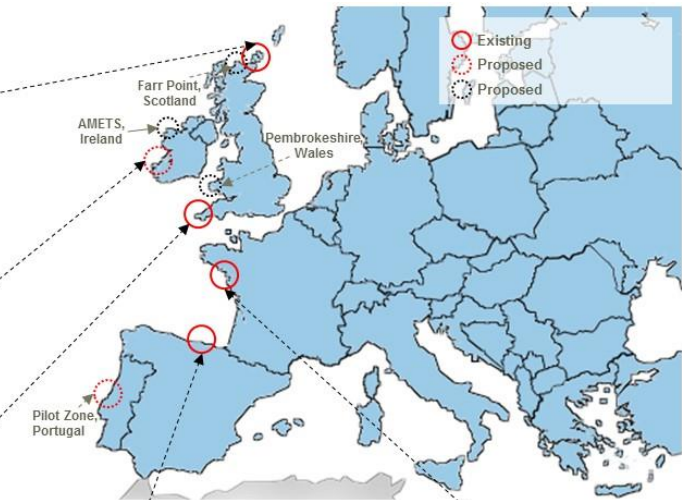
Wave Hub, Cornwall, UK



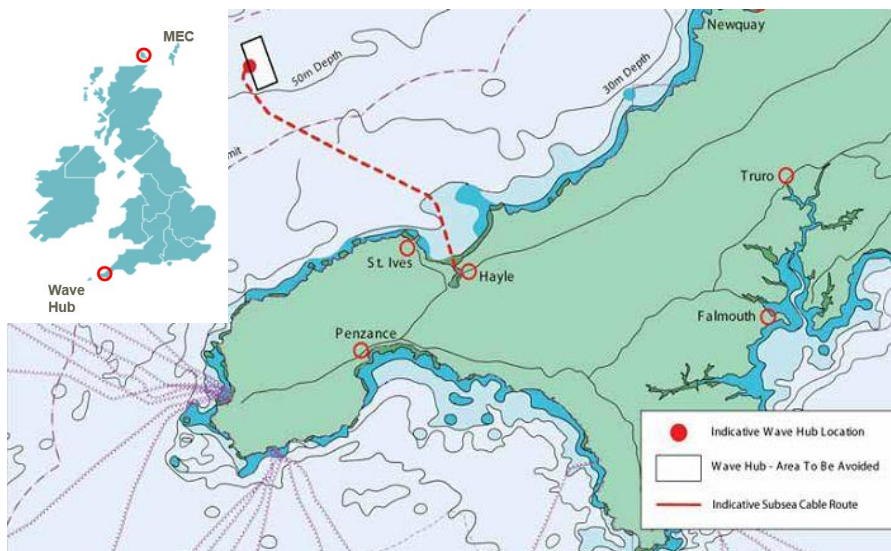
BiMEP, Spain



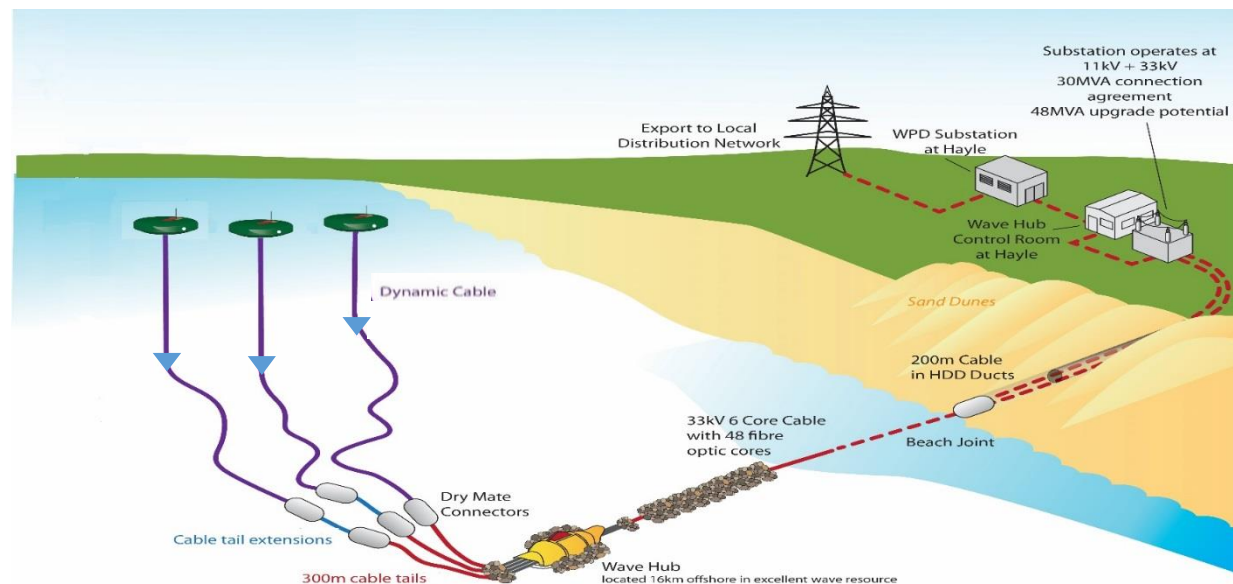
SEM-REV, France



UK CETO 6 – Wave Hub, Cornwall



- Upwards of \$70 million spent by UK Government on existing offshore and onshore power infrastructure and grid connection.
- Existing infrastructure capable of hosting 50MW project.
- Supported by \$500/MWh feed in tariff and Government grants.
- CWE UK berth secured up ~10MW project.
- Grant application submitted.

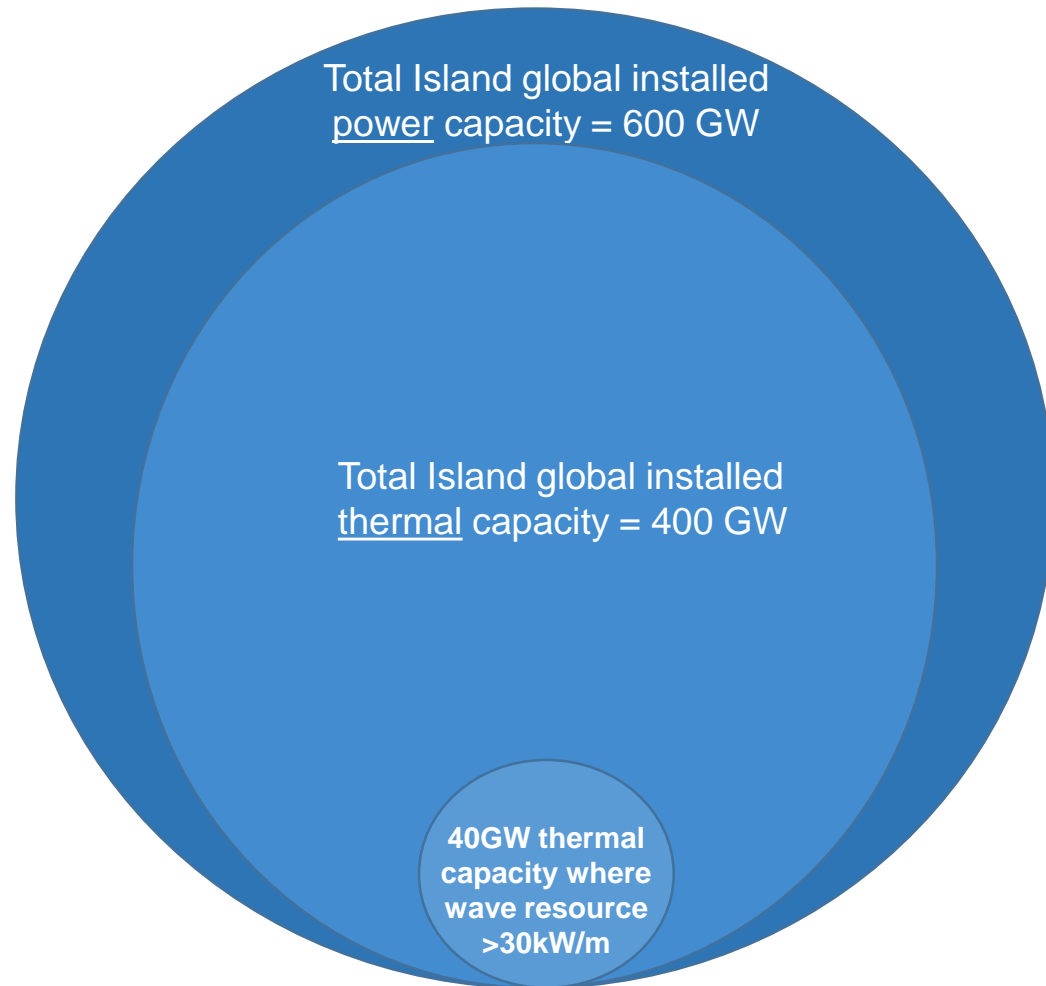


Ongoing R&D focused on Highest Opportunity Areas

- Wave Energy Scotland (WES) funded Artemis hydraulic motor digital displacement technology applied to CETO.
- Partner in the SUPEGEN funded “E-Drive” linear generator project with University of Edinburgh applied to CETO.
- Wave tank testing to be conducted at FloWave and Plymouth University’s COAST facility in April 2016 for CETO 6.
- Collaboration Agreement with Atlantis Resources focused on electrical architecture.
- University of Western Australia’s (UWA) Centre for Offshore Foundation Studies (COFS) development of novel foundation technologies and improvements in calculation of load cases for CETO.
- University of Adelaide development of control strategies to increase efficiency of CETO.
- University of Dublin collaboration to optimise hydrodynamics performance through BA shape studies.

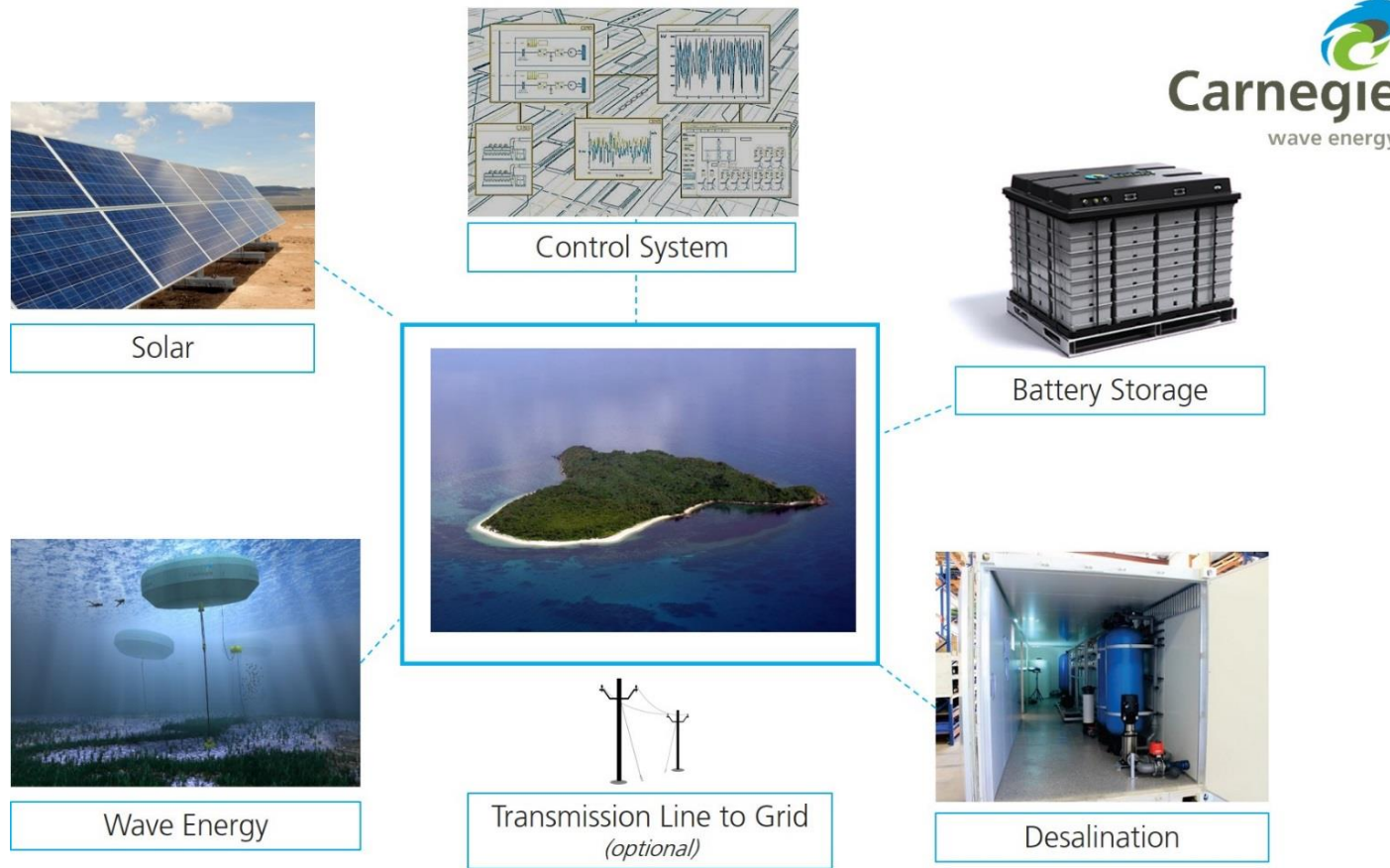


International Markets - Islands



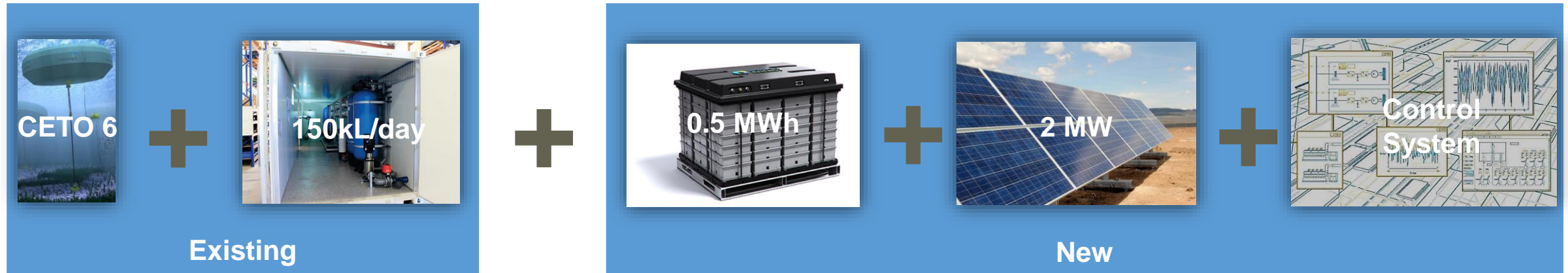
1. At least **400,000 MW** of existing thermal installed capacity that could be replaced with renewable energy. And with energy consumption growing in developing nations growing at ~ 8% p.a.
2. About 10% of this or **40,000 MW** has a wave resource in excess of **30kW/m**.
3. These islands are not yet ready for a wave system – require an *integrated & demonstrated* RE solution.
4. Microgrid solutions can be delivered now and made “CETO compatible” so CETO can be “retrofitted” once ready into the 40,000 MW market place.
5. And an effective non-wave, microgrid solution would open up the remaining **360,000 MW** (non-wave) market not currently available to CWE
6. Many islands, e.g. Mauritius and Seychelles, have RE targets ranging from 15% to 100% and need technical and commercial solutions to now deliver on targets.

Wave-Integrated Microgrids – Expanding Our Capability



- Combine multiple energy generation sources with sophisticated control systems and energy storage.
- A mix of renewable generation technologies e.g. solar, wind and wave, takes advantage of different time of day or seasonal variation thus reducing the amount of energy storage and diesel generation required.
- Desalination increases the options to integrate higher levels of renewables by using water as a form of energy storage and allows direct use (local) of renewable energy to provide desalinated water

First CETO 6 Microgrid Project - Garden Island



- Garden Island Microgrid (GIMG) will be the world's first wave integrated renewable microgrid project.
- CETO 6 project at Garden Island (GI) will integrate:
 - Planned CETO 6 units.
 - Existing infrastructure.
 - Large scale solar PV farm.
 - Battery storage and control systems.
- Partnering Western Power, who provide grid and network expertise and support.
- Project power and water purchaser is the Australian Department of Defence.
- Construction to start in 2016.

Wave and Microgrid Design Project – Mauritius and Rodrigues



- Carnegie to be paid \$800,000 to deliver study and design activities for initiatives focused on microgrids that incorporate wave energy (first milestone payment already received).
- The project will deliver three outcomes in 2016, including:
 - A renewable energy roadmap for Mauritius.
 - An assessment of the Mauritian wave energy resource and the identification of a preferred site for a commercial CETO wave energy project.
 - The design of a microgrid powered desalination plant on Rodrigues.
- First project steering committee convened in February.
- Preparations currently being made for the deployment of a wave data collection buoy.



Key Achievements & Upcoming Wave Developments

CETO 5 Perth Wave Energy Project

- ✓ 3 units installed and 14,000 hours of operation completed.
- ✓ Exported power and water to the Australian Department of Defence.
- ✓ Computational models validated.

CETO 6 Project, Western Australia

- ✓ CETO 6 concept design complete.
- ✓ Fully funded.
- Construction to start 2016.

CETO 6 Project, UK

- ✓ Development started 2015.
- Funding progress expected in coming months.
- Construction 2018.

Microgrids

- Mauritian project delivery.
- Garden Island Microgrid construction to start in 2016.

