ASX Announcement

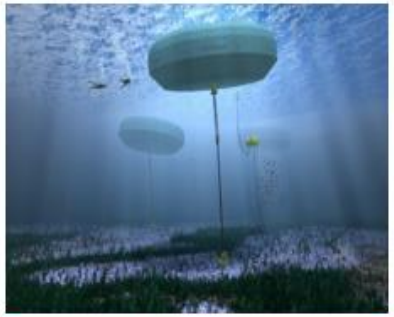
July 28th, 2016

Carnegie Wave Clean Energy Summit Presentation

Please find attached a presentation delivered by Carnegie Wave Energy Limited's CEO, Dr. Michael Ottaviano, today in Sydney, at the Clean Energy Council's Clean Energy Summit. The presentation outlines CETO development, as well as Carnegie and EMC's microgrid projects and how they are overcoming obstacles in powering remote Australia.

For more information:
Dr Michael Ottaviano
Managing Director
Carnegie Wave Energy Limited
(08) 9335 3993
enquiries@carnegiewave.com
Website: www.carnegiewave.com

Solar



Wave Energy

Desalination

Energy Storage

Control System

Transmission Line to Grid

The delivery of very high penetration renewable energy microgrids to remote locations

Carnegie Wave Energy Limited

(ASX:CWE)

Dr. Michael Ottaviano

Chief Executive Officer

Carnegie wave energy

Disclaimer

The information contained herein has been prepared solely for informational purposes and is not an offer to buy or sell or a solicitation of any offer to buy or sell any security or to participate in any trading strategy or to enter into any transaction. If any offer of securities is made, it shall be made pursuant to a definitive offering memorandum prepared by or on behalf of any fund or other issuer which would contain material information not contained herein and which would supersede this information in its entirety.

Wave + Solar + Battery

- ASX listed owner and developer of world leading “CETO” wave energy technology.
- More recently diversified into microgrids for islands and remote locations.
- Rationale:
  - Takes advantage of CWE’s existing island relationships and capabilities in delivering complex and remote projects
  - Enables development of knowledge, relationships and credibility in core wave market (islands) including grid, infrastructure, utilities, resource, financing etc
  - Allows the delivery of projects now that are forwards compatible with wave energy, particularly when penetrations are high and the consistency of wave is most beneficial
  - Brings forward revenues earlier than wave alone (without distracting from wave development)
  - Allows sufficient time for the commercialisation of wave technology without taking excessive risk

Recent Microgrid Activity

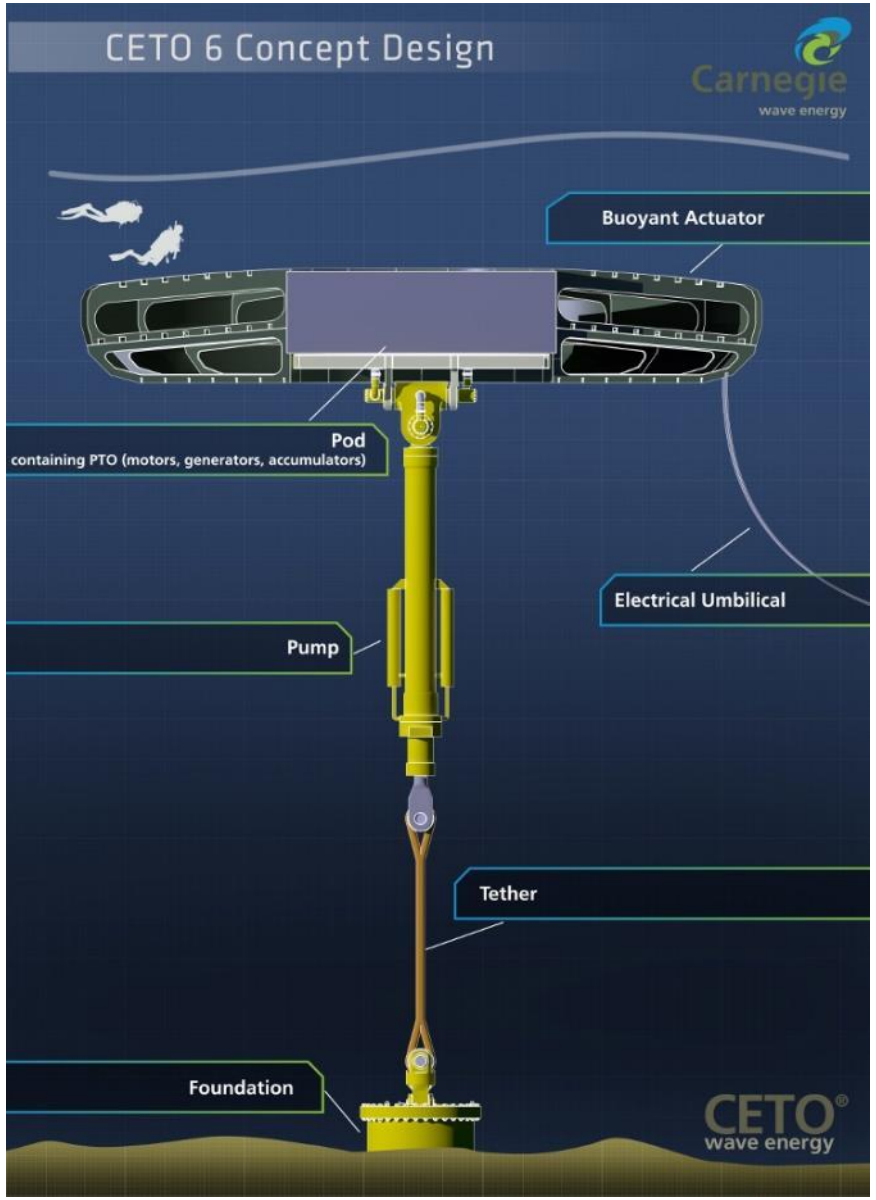
- Mauritius project:
  - Microgrid design and roadmapping project on Mauritius.
- Energy Made Clean
  - 35% stake in and strategic alliance with EMC, leading Australian solar/battery microgrid EPC.
- Garden Island Microgrid
  - World first wave integrated microgrid system: 2MW solar, 2MW/0.5MWh and controls added to CETO 6 and existing CWE desalination plant and DOD diesel and Western Power grid. Circa $7.5m capex. Expecting grant decision Q3.

- Started on building pipeline of microgrid projects

CETO 5: Perth Wave Energy Project

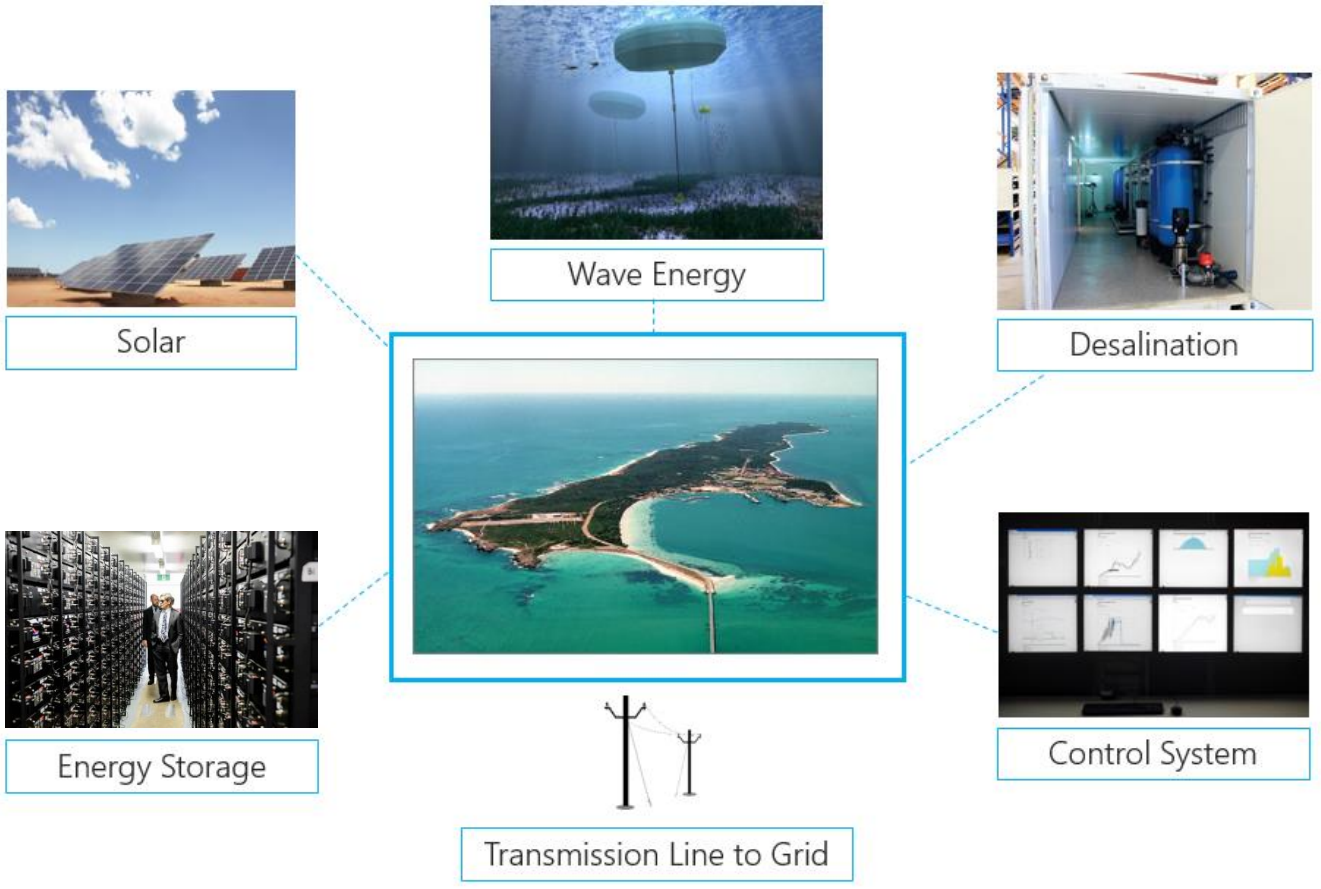
Was only operational wave farm project in world and only wave project to operate across 4 seasons (14,000 cumulative operational hours)

CETO 6 – Commercial Product Platform



- Approx. four times the output of CETO 5. Nominal 1MW capacity.
- 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
- First project sites:
  - Garden Island, Western Australia - $11m ARENA grant, $20m Commonwealth Bank facility
  - Wave Hub, Cornwall, UK – grant decision expected Q3. Existing cable and grid connection, expansion potential at site plus feed in tariff.
- Future project sites include fringe of grid and off-grid Australia

Wave-Integrated Microgrids – Expanding Our Product Offering



- Integration of multiple, proven energy generation sources
- Enabled by sophisticated control systems and storage
- CWE & EMC alliance to deliver fully integrated project: design, finance, EPC and O&M.
- Desalination allows higher levels of renewables, as a form of energy storage
- Garden Island Microgrid (GIMG) will be the world's first wave integrated renewable microgrid project.
- Delivering Mauritian wave and microgrid design project

Carnegie and Energy Made Clean

Energy Made Clean

- Carnegie invested $4.5m for 35% of Energy Made Clean (EMC) and the parties form alliance in March 2016.
- Focused on delivery of proven renewable microgrids to islands, off-grid, fringe-of-grid communities
- Leading Australian Solar/Battery Microgrid EPC
- 55 staff and offices, workshop, warehouse, test facility and equipment fleet based in Perth, Brisbane and Melbourne.
- Licensed Electrical Contractor, Licensed Electricity Retailer (SWIS), CEC Accredited, Chartered Engineers & NPERs
- Partnership with NZ utility Infratec to expand state-of-the-art Solar/Battery/Diesel Solutions to NZ and the Pacific Islands

Remote monitored and controlled 100 kW PV /110 kVA Diesel/ 64 kWh battery project in outback Australia


3,500 m2 construction and staging facility, Western Australia

EMC's Microgrid Solution

Energy Storage

Solar PV

Standardized Package

- Power On Demand Range
- 5ft, 10ft, 20ft, 40ft containers
- Pre-commissioned stand-alone power systems
- Configurable power/energy ratio
- Plug and play installation
- Fully remote monitored an managed

Rapid Deployment

- Factory Acceptance Testing
- Factory Commissioned
- Plug and Play
- Reduced time on-site

Case Study- Defence Island

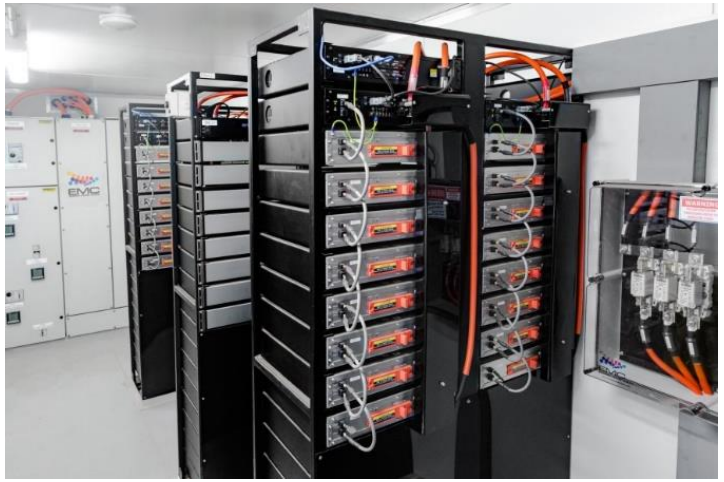
- 64 kWh Lithium Iron Phosphate Batteries
- 35 kW Solar PV
- Pre-assembled and pre-commissioned POD
- Rapid deploy PV ground mount
- Fully remote monitored and controlled

Case Study- Tourism Island

- 614 kWh Lithium Iron Phosphate
- 324 kW Solar PV (east/west)
- 440 kVA Diesel Generation (4 x 110kVA)
- Containerised in 2 x 40ft Containers
- Ground Mount Screwpile Solar PV (Category D)
- Real time monitoring and control

Case Study- Grid Defection

- 64 kWh Lithium Iron Phosphate
- 100 kW Solar PV
- 110 kVA Diesel Generator
- Pre-assembled and pre-commissioned POD
- Carport Mounted Solar PV (Category D)
- Fully remote monitored and controlled



Case Study- Utility Scale

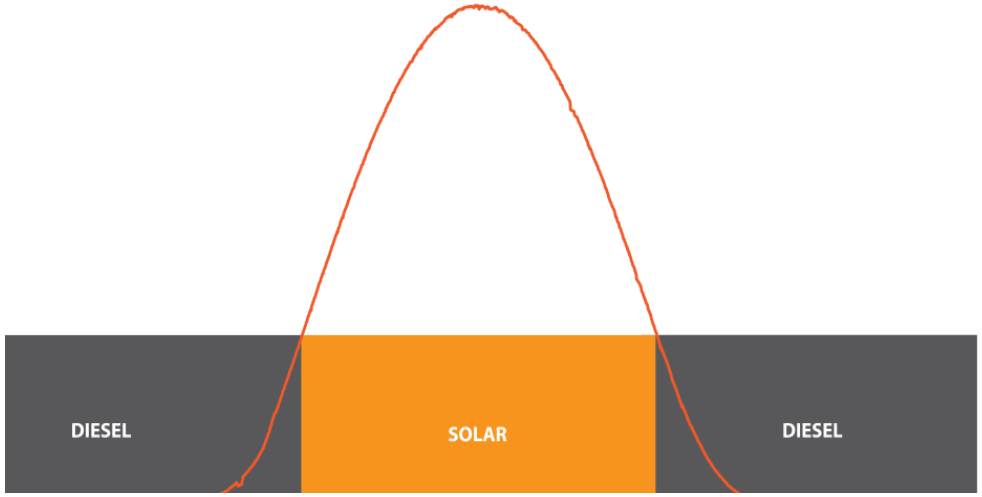
- 1.6 MW Solar PV
- 1.25 MVA/2.6 MWh Samsung SDI Lithium batteries (68Ah)
- Containerised installation by EMC
- Fire Suppression
- Centralised HVAC

Case Study- Replacing Poles

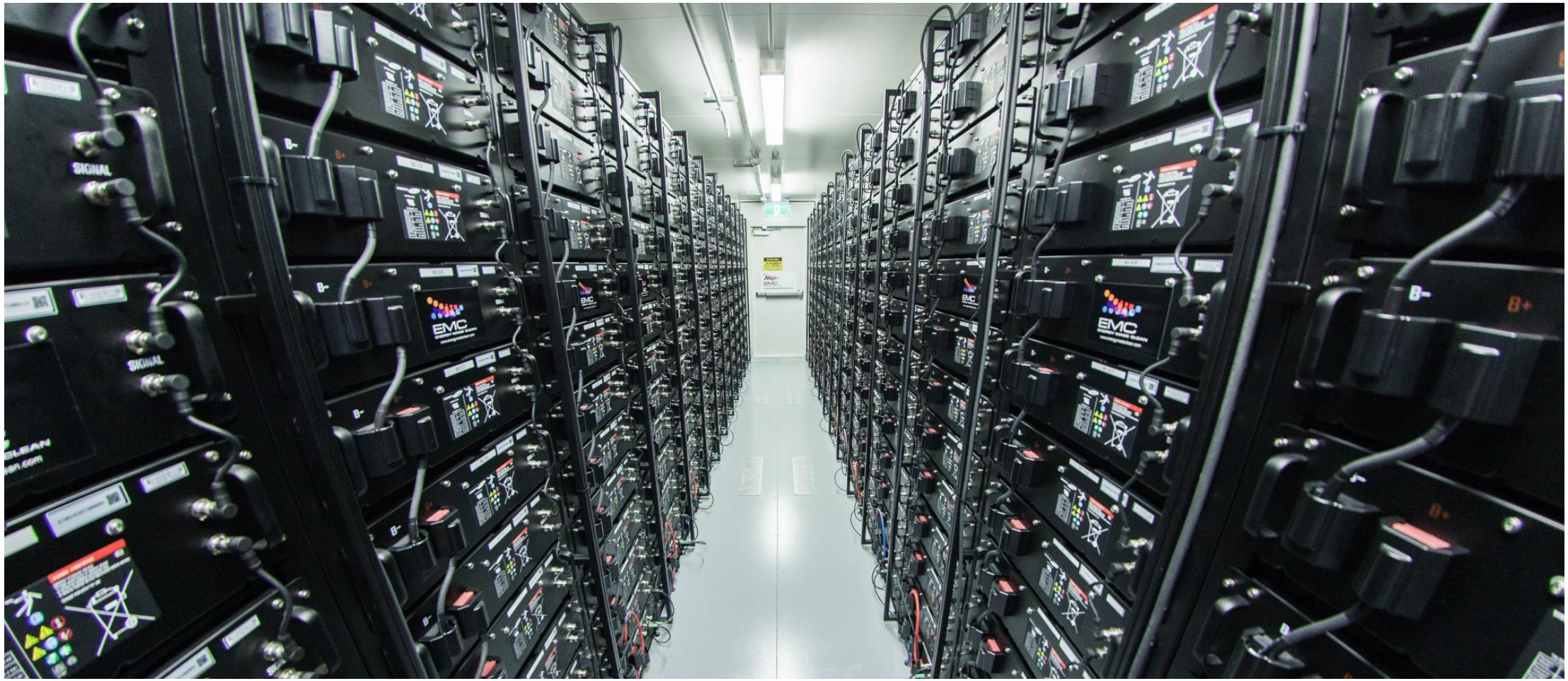
- Fringe of Grid Utility Installations
- Power Utilities opting for the alternative
- South West of WA (Esperance and Ravensthorpe)
- Systems between 10-80 kWh Lithium Batteries
- Systems between 8-20 kW Solar PV ground mounted
- Fully remote monitored and maintained

Water Pumping

- PV only
- PV/Diesel
- PV/Battery/Diesel
- Standard 3-phase submersibles
- 1-250 kW Pump supply
- Fully remote monitored and controlled
- Very good value proposition due to traditional industries approach



Utility Battery



Summary

- CWE owns and develops the world leading wave power technology, CETO, and after nearly 10 years and $100m invested, has a clear pathway to commercialisation.
- Island barriers to entry (fragmented, remote, small, customers ability to pay) can be overcome by an innovative, nimble organization delivering an integrated clean power, water and financing solution.
- Carnegie's team is experienced in complex stakeholder management, financing and microgrid design, EPC and O&M capability uniquely positioned to displace high cost/dirty diesel and provide an energy secure, fully financed, sustainable solution based on proven technologies.
- Microgrid project delivery now creates the market for the more consistent wave energy technology once proven which will enable very high penetration microgrids whilst diversifying CWE's business.