



EUROPEWAVE

ACHIEVE

Advanced CETO for High Impact and Efficiency Validation in Europe

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CETO

WAVE ENERGY IRELAND



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement 883751.



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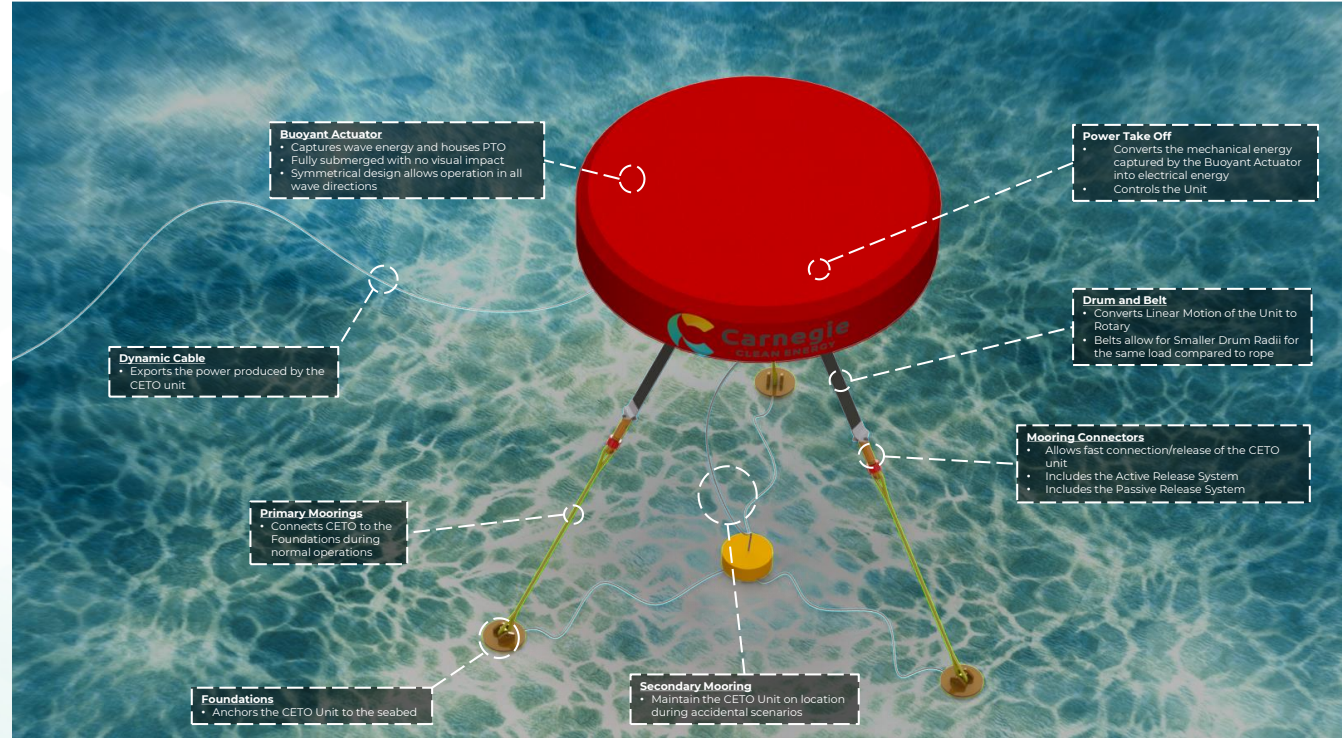
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CETO Technology – Key Features

- Point Absorber
- Axisymmetric
- Submerged
- Multi-moored
- Scalable
- Adapts to various depths
- Optimised for lowest LCOE
- Survivability

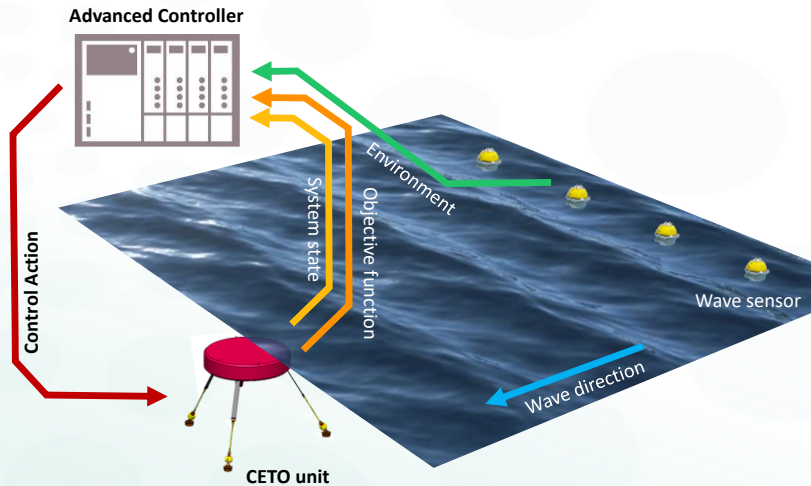


CETO Technology – Key Features

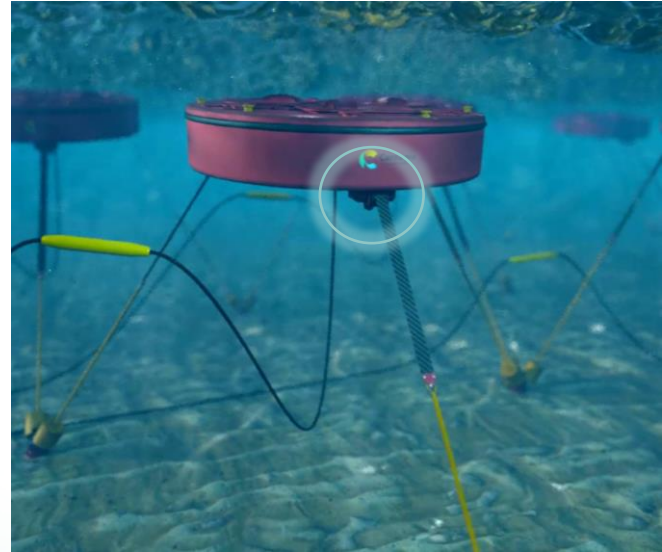


CETO Technology – Key Innovations

Advanced Controller



Rotary Electric PTO



Phase 2 tank testing



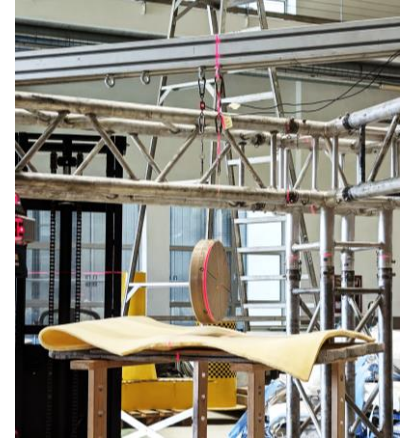
1:35 3D-printed model
Excellent outcome



Integrate as much as possible before the campaign !



Think big: both MPC and RL controller tested



Measure your model properties
(even the most obvious ones)

Phase 2 Belt Testing










- Belt testing at VGA
- Belt bending cycles over sheaves
- Fleet, Twist and Tension set by rig
- Tracking behaviour and belt damage to be evaluated



Phase 2 outputs & learnings

- Completion of **FEED** for all main subsystems (BA update, MC, secondary mooring...)
- Validation of the **refined numerical models**
 - **Improved system architecture and control** have overcome potential yawing issues
- Successful **testing of the advanced controls** in tank
 - Good progress on **RL implementation** by HPE
- Successful testing of **survivability** capabilities in tank
- Successful testing of the **PTO** (Mooring Tensioner, belt, ...)
- Refining of marine **operation plans**
- Refining of **techno-economic** assessment
- Update FMECA and technology and **risk** registers
- Independent **third-party validation** of the technology analysis
- Progress along the **certification pathway**

ACHIEVE Project – Phase 3 – Organisation Breakdown Structure

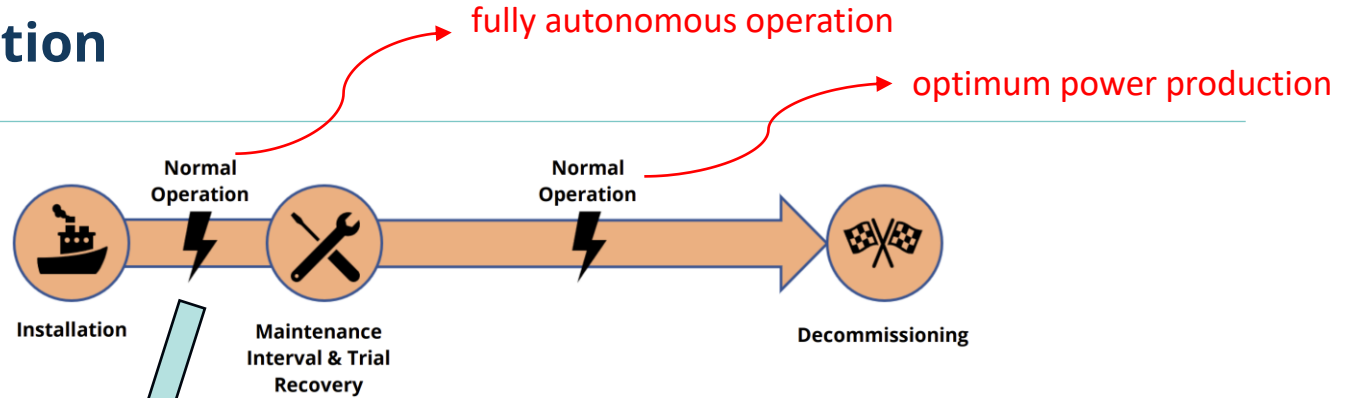
			WP 1 Project Management	WP2 Detailed Design	WP3 PTO Testing	WP4 Procurement & Fabrication	WP5 Assembly & Final Testing	WP6 Offshore Preparation	WP7 Offshore Operations	WP8 Commercial Exploitation	WP9 Certification Pathway
Consortium	Steering Committee Members		Leading	Leading	Leading	Leading	Leading	Leading	Leading	Leading	Supporting
			Supporting	Supporting		Supporting		Supporting			
Subcontractors	Design and Components			Supporting		Supporting	Supporting	Supporting	Supporting		
				Supporting		Supporting					
				Supporting		Supporting			Supporting		
				Supporting		Supporting	Supporting				
	PTO Testing				Supporting						
	Techno-Economic									Supporting	
	Certification			Supporting							Leading

* This table shows the Work Packages that each partner is leading or supporting and includes lead personnel names. There are also key interlinkages between the Work Packages that will be managed by CETO Wave Energy Ireland.

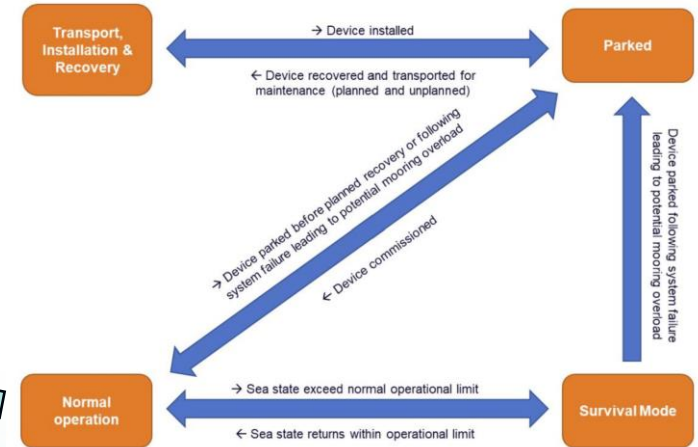
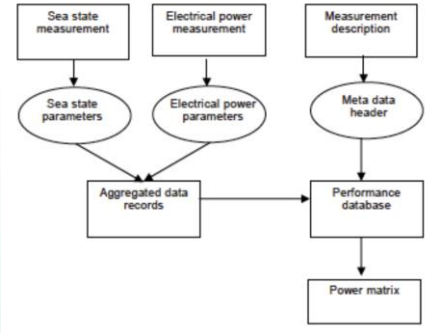
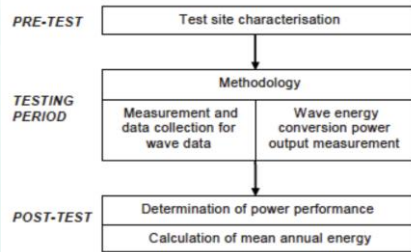
Phase 3 – Target Outcomes

- Complete **detailed design** compliant with Phase 3 deployment
- Obtain licensing and comply with **HSE** requirement
- Manage successfully **manufacturing and assembly** of WEC
- Demonstrate effectiveness of **operational strategies**
- Produce energy continuously and demonstrate **reliability**
- Demonstrate effectiveness of **survival strategies**
- Complete **Stage 3** of IEA Framework
- Unlock learning and confidence for **commercial roll-out**

Phase 3 - Operation

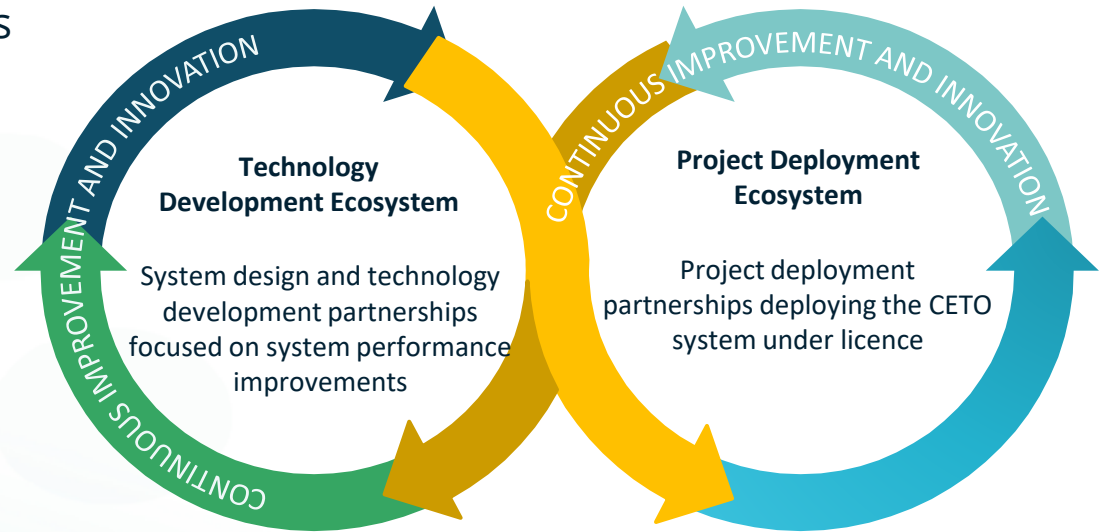


IEC TS 62600-100



Long term vision


- CETO Prototype deployment unlocks roll out of CETO projects
- GWs of global CETO commercial deployments
- CETO deployed by partners under license/supply agreements
- Positioned as Technology Provider with strategic partners
- Wave energy is major contributor to clean energy






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