

ACHIEVE: Deployment Update & Programme Objectives

- CETO Buoyant Actuator (BA) fabrication complete and being prepared for transport to port of Bilbao for final quayside activities
- First stage of Carnegie's wave energy converter deployment under the ACHIEVE Programme will commence in November with mooring installation and deployment of the CETO BA at the Biscay Marine Energy Platform (BiMEP)
- Power take-off (PTO) assembly and onshore testing will be completed in parallel in preparation for second stage deployment and grid connection in Spring 2027
- Measurable technical and operational objectives delivered by the Programme to support CETO commercialisation

Carnegie Clean Energy (ASX: CCE) ("Carnegie" or the "Company") is pleased to advise that fabrication of the ACHIEVE Programme's CETO Buoyant Actuator (BA) has been completed. The CETO BA, the prime mover of the CETO system, is now being prepared for transport to the port in advance of the ACHIEVE Programme's first stage of ocean deployment which will commence in November.

Built locally in the Basque Country using a modular design to simplify road transport, the CETO BA will be transported to the Port of Bilbao where the three modular sections will be re-assembled on the quayside, and finishing elements such as fenders attached. The CETO BA will then be lifted into the water portside and towed to Carnegie's berth at the Biscay Marine Energy Platform (BiMEP) for its first stage of deployment, validating CETO hydrostatic characteristics, towing performance and local offshore supply chain.



Fabrication snapshots of the ACHIEVE CETO Buoyant Actuator over recent months

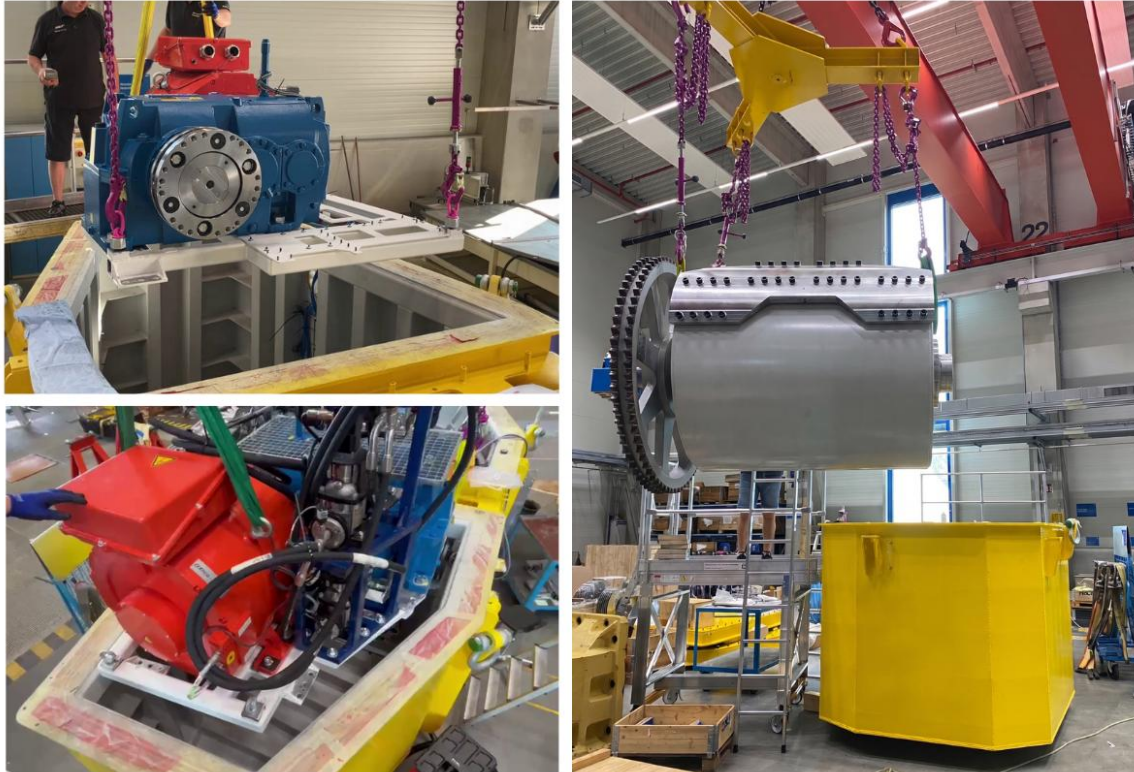
In parallel with the CETO BA final preparations, an initial mooring system will be deployed at Carnegie's BiMEP berth for the first stage of deployment. The power take-off (PTO) assembly and onshore testing will be completed in preparation for the second stage of deployment when the full CETO system will be deployed and grid connected in Spring 2027.

During CETO BA fabrication, the team completed physical system fit tests, validating the benefits of CETO's modular philosophy where the three PTO modules and electrical module can be quickly inserted and removed from the Buoyant Actuator. This feature provides significant advantages for installation, operations and maintenance activities by enabling works on any module to be undertaken with ease by simply lifting the module out and allowing for any work to be completed on shore. With this approach, any module can be swapped out with a spare, thus enabling a quick turnaround during maintenance periods and reducing downtime of the CETO system. Demonstrating this process during the ACHIEVE Programme will support CETO's long term commercialisation pathway by reducing costs and improving performance of future CETO arrays.



PTO (yellow module) and Buoyant Actuator (BA) fit testing

In parallel with the CETO BA activities described above, PTO module assembly has been progressing at SKF, where mechanical and electrical components are being fitted within each module.



PTO Assembly - generator and cooling systems (left), tensioner system (right)

Following completion of the PTO assembly, the team will undertake a final onshore testing programme of the PTO modules and electrical module to validate operation of the PTO architecture, electrical and control system onshore in a controlled environment. Once this is completed, the modules will be brought to the port for integration into the Buoyant Actuator and commencement of the second stage of deployment. This second phase will commence in Spring 2027, following the Basque winter months, enabling the initial grid connection to occur during more favourable weather windows.

ACHIEVE Programme Objectives

While the project has progressed beyond the original schedule, the Board recognises that delivery of the ACHIEVE Programme represents the culmination of a substantial engineering, manufacturing, testing and integration programme undertaken by the Company's team and project partners. As is common for first-of-a-kind offshore energy systems, additional time has been invested in engineering validation, operational readiness, installation planning and integration activities to support safe deployment and maximise the opportunity to obtain meaningful performance data during the demonstration phase. Additionally, the team has dealt with unforeseen challenges such as first-of-a-kind manufacturing issues and supply chain delays which have impacted the schedule.

The Company's ACHIEVE activities have been designed to assess a range of technical and commercialisation objectives established under the EuropeWave Pre-Commercial Procurement

Programme framework. The deployment is intended to generate operational and performance data to support future assessments of energy production, reliability, survivability, maintainability and commercial viability.

The Board believes the additional engineering and testing undertaken during the development phase has strengthened the programme and enhanced the opportunity to evaluate the performance of several proprietary technologies under real-world offshore operating conditions. Deployment of the 80 kW rated scaled ACHIEVE CETO demonstrator unit represents an important step in validating the Company's next-generation CETO technology and its suitability for future larger commercial-scale applications.

Carnegie's ACHIEVE Programme has been structured around a series of measurable commercial, technical and operational objectives, including:

- **Commercial**

The ACHIEVE project incorporates several design and engineering innovations to support the future commercialisation of the CETO technology. The deployment will validate these features designed to reduce lifecycle costs, simplify deployment and maintenance activities, and support future large-scale manufacturing and project deployment.

The adoption of a modular architecture aims to facilitate fabrication, transportation, assembly and system integration using existing industrial supply chains and port infrastructure. The Company believes this approach has the potential to support scalable manufacturing, improve logistics flexibility and reduce installation complexity for future commercial projects.

The CETO system has also been designed to operate completely submerged beneath the water surface during normal operation. The ACHIEVE deployment will further validate this approach, which is intended to enhance safety and minimise visual impact from shore, avoiding the key social licence impediment seen by offshore wind and other ocean developments.

- **Energy Capture and Power Conversion**

Operational and performance data will be collected to assess whether future commercial deployments can achieve capacity factors consistent with the Company's pre-deployment modelling.

The Company's modelling indicates that future deployments at selected sites in Spain, Scotland, Ireland, Australia, the United States and other locations with comparable wave resources may be capable of achieving capacity factors in the range of 30% to 50%, with higher capacity factors possible depending on how unit capacity is rated.¹

Energy production data will also support the validation of the forecasts related to spatial density where CETO is expected to achieve 30 MW of capacity for every square kilometre of seabed required. By comparison, offshore wind typically has a spatial density of 6 MW / km². This means CETO has the potential to deliver significantly more energy from a smaller footprint.

- **Advanced Control System Evaluation**

¹ The Capacity Factor is the ratio between a generation unit's maximum output (Rated Capacity) and its actual output over a period of time. At its simplest, the Rated Capacity of a generation unit is the maximum electric output it can produce under specific conditions; in practice, these conditions are defined differently for various technologies and companies. Therefore, it is difficult to properly compare figures across generation technologies and any comparisons should be considered in this context.

The deployment will evaluate the Company's control algorithms, which have been developed to optimise power capture while managing structural and operational loads.

Development work undertaken with Hewlett Packard Enterprise (HPE) has contributed to the design of control algorithms incorporating Artificial Intelligence (AI) and machine learning techniques. The deployment programme is intended to assess the effectiveness of these algorithms in improving energy capture and overall array performance under operational conditions.

- **Survivability and Reliability**

A range of active and passive survivability strategies incorporated into the CETO design will be tested. These include the ability of the system to adjust its operational position within the water column during adverse weather conditions while maintaining system integrity and continuing to generate electricity.

Survivability principles have formed part of the technology's core architecture since inception and are reflected throughout the Company's engineering design, deployment planning and operations and maintenance (O&M) strategies.

- **Operations and Maintenance**

The ability to undertake CETO maintenance activities within existing port infrastructure while minimising offshore intervention requirements will be assessed.

CETO's O&M strategy has focused on reducing reliance on divers and minimising the need for specialised offshore vessels. The system's modular architecture has been designed to facilitate easy removal and swapping of power take-off (PTO) modules from the quayside whilst leaving the primary BA structure in the water. This is important for future commercial deployments as it should demonstrate the feasibility of rapid PTO replacement procedures and maintenance activities intended to improve operational availability and reduce maintenance-related downtime.

- **Technology Development Progress**

Previous CETO deployments undertaken in 2011 and 2015 successfully demonstrated earlier generations of the technology and achieved Technology Readiness Level (TRL) 7. The Company's decision to undertake the Digital Development pathway in 2019 was a strategic step back in TRL which delivered important step change improvements in the technology (such as multiple moorings, rotary PTO and advanced control) which are now being demonstrated through the ACHIEVE Programme to support future commercialisation pathways for CETO arrays.

In fact, it was the Digital Development Pathway's successful incorporation of these key design advancements that unlocked CETO's top ranked position in the EuropeWave Programme and the funding for the ACHIEVE Programme. The deployment has been optimised to achieve multiple technical objectives within the scope and budget of the ACHIEVE Programme.

ACHIEVE activities from design to operations are delivering data that supports future assessments of CETO's levelised cost of energy (LCOE). The Company's LCOE modelling has been reviewed by an independent expert and formed part of the technical assessment undertaken during the EuropeWave Programme evaluation process.

- **Market Context**

The Company's development activities are aligned with broader European ocean energy commercialisation initiatives. The European Union has established objectives of achieving at least 1

GW of installed ocean energy capacity by 2030 and 40 GW by 2050, highlighting the potential role of ocean energy within the future renewable energy mix.

While Europe remains the Company's primary target market, management continues to monitor potential future opportunities in other jurisdictions where suitable wave resources, energy market conditions and customer requirements exist.

Further updates will be provided in November as the ACHIEVE CETO unit advances towards its first stage of ocean deployment.

View and engage with this announcement with Carnegie's dedicated hub:

<https://investors.carnegiece.com/link/eW1EjP>

This announcement has been authorised by the Chairman and CEO.

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ABOUT CARNEGIE AND ITS SUBSIDIARIES

Carnegie Clean Energy (ASX: CCE) is a technology developer focused on delivering ocean energy technologies to make the world more sustainable. Carnegie Technologies Spain and CETO Wave Energy Ireland are wholly owned subsidiaries of Carnegie Clean Energy. Carnegie is the owner and developer of the CETO® and MoorPower® technologies, which capture energy from ocean waves and convert it into electricity. Using the latest advances in artificial intelligence and electric machines, Carnegie optimally controls our technologies and generates electricity in the most efficient way possible. The company has a long history in ocean energy with a track record of world leading developments. <https://www.carnegiece.com>

ABOUT ACHIEVE PROGRAMME

The ACHIEVE Programme is an initiative being delivered by Carnegie's subsidiaries CETO Wave Energy Ireland under contract by EuropeWave Buyers Group (ACHIEVE Project) and Carnegie Technologies Spain with the support of funding awarded by the Spanish Government through the RENMARINAS Demos Programme (AGUAMARINA Project) and the Basque Government through a grant from the Ente Vasco de la Energia (ACHIEVE+ Project).

Through this collaborative initiative, Carnegie will deploy and operate a CETO prototype at the Basque Marine Energy Platform (BiMEP) in the Basque Country, Spain, marking a key step on CETO's commercialisation pathway. The CETO Unit will operate in this open ocean site and the data collected will be used to validate the performance of the CETO technology and propel it along the commercialisation pathway.



ABOUT EUROPEWAVE



EuropeWave PCP is an innovative R&D programme for wave energy technology, which runs from 2022 to 2026. It combines over €22.5m of national, regional and EU funding to drive a competitive Pre-Commercial Procurement (PCP) programme for wave energy.

Originally pioneered by the Wave Energy Scotland programme, the PCP model provides a structured approach, fostering greater openness, collaboration and sharing of risk between the public sector and technology developers. The programme will focus on the design, development, and demonstration of cost-effective wave energy converter (WEC) systems for electrical power production that can survive in the harsh ocean environment.

Match-funded by the EU's Horizon 2020 programme, EuropeWave is a collaboration between Wave Energy Scotland (WES), the Basque Energy Agency (EVE) and Ocean Energy Europe (OEE). This collaboration is closely aligned with the decarbonisation, industrial and competitiveness objectives of the European Green Deal, and is part of a range of actions being taken to meet the European Commission's targets of 100MW of ocean energy by 2027 and at least 1GW by 2030.



The EuropeWave Project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No 883751.

<https://www.europewave.eu/>

ABOUT RENMARINAS DEMOS

The RENMARINAS DEMOS Programme was established by Spain's Ministerio para la Transición Ecológica y el Reto Demográfico (Ministry for Ecological Transition and the Demographic Challenge) to grant aid for investment in pilot projects, test platforms and port infrastructure for marine renewables. This was established within the framework of the European Union-funded Recovery, Transformation and Resilience Plan, Next Generation EU. The programme provides aid in the form of a non-refundable grant managed by IDAE, Instituto para la Diversificación y Ahorro de la Energía (Institute for Diversification and Energy Saving).



ABOUT ENTE VASCO DE LA ENERGIA (EVE)

The Ente Vasco de la Energía (EVE) is the Basque Country's energy agency, a public body established by the Basque Government. EVE serves as a central force in the region's energy sector, with a focus on the promotion of energy efficiency, the expansion of renewable energy sources, the development of sustainable energy policy, and the advancement of innovative energy technologies. The funding has been provided through the Grants programme for investment in the demonstration and validation of emerging marine renewable energy technologies 2023 to further support the ACHIEVE Programme.

