# AEON ENERGY

# HARNESS THE ENERGY AROUND YOU.

Hybrid clean floating energy without using a single square foot of land.

We empower climate-vulnerable coastal communities with affordable, accessible clean energy.

# **Islands' Energy and Environmental Challenge**

Island communities, regions and states all over the world struggle in their need to access cheap and reliable power supply sharing common pains.



# **Aeon's Solution – The Manta**

Oscillating Water column Wave energy converter (WEC) utilising vertical axis wind turbine

A floating, hybrid-source renewable energy generator catering the offshore renewable solutions market



# Aeon's Solution – Solar power and Wind power modules



Manta<sup>™</sup> Solar-Wave-Tidal Assembly



#### 3 Solar power assemblies:

- o Solar + Wave
- o Solar + Tidal
- o Solar + Wave + Tidal



Plus 3 additional plant configurations by combining different assemblies:

- Solar + Wind + Wave
- o Solar + Wind + Tidal
- Solar + Wind + Wave + Tidal

Manta™ Wind-Wave-Tidal Assembly



#### 3 Wind power assemblies:

- o Wind + Wave
- o Wind +Tidal
- o Wind + Wave + Tidal

# **Aeon's Solution – The Manta**

### Tests and simulations



1:100 scale prototype tested at the Imperial College Advanced Hackspace validating performance in a laboratory environment





1:15 scale tested in the wave flume at Plymouth Uniersity's wave basin. 4 m. wave conditions

## Wec-Sim simulations



#### Non-linear wave pressure on the device: Froude Krylov forces



Motion of the device in irregular waves

## **The Market**

Early Adopters -Maldives & Fiji



Primary Market -SIDS & European Islands



 Established collaborations in the Maldives and Fiji through Innovate UK's Energy Catalyst competition.

- The Maldives imports \$589 m/y fossil fuels for electricity needs (potential to replace +320 diesel plants).
- Fiji imports \$138 m/y in fossil fuel for its electricity needs potential to replace 40% of its total power capacity.

- Over 65 million people live on 58 Small Island Developing States (SIDS) around the world
- 16 million Europeans live on islands, which adds up to 166 TWh/year of which barely 10% is from renewable energy.

## Secondary Market – Islands & Coastal Areas



- The only pre-requisites for our technology are access to sea and a pre-existing grid,
- Our total addressable market is made up of islands and coastal areas
   currently facing increasing demographic pressures and land shortage.

Based on our kWh analysis of each respective market

# **The Competition**

As an innovative solution within the renewable energy market, there are no direct competitors that harness solar, waves, wind and tidal energy in a single solution. The closest comparisons within the current market are:



# **Swimsol**

A floating solar panel company. Proprietary technology SolarSea® consists of independently installed, fixed, and purely solar floating modules. **Bulk of revenue** comes from **roof mounted PV** with **only 4 SolarSea® projects.** 



A solar energy company with floating applications combined with wave energy. Their product consists of:

- **5m tall fixed structure** limiting installation to **sheltered areas**.
- Point absorber wave energy conversion method more expensive and less efficient than Aeon's OWC



A floating solar company with a circular, membrane-based design. Design is:

- **Purely solar** (wave energy is dissipated)
- Only suitable for reservoirs or sheltered, near shore environments.

# **Our Next Steps & Vision**

## Lab Test and Pilot Installation

- Wave basin testing at COAST laboratory – University of Plymouth.
- 60 kWp paid pilot off the coast of Ungoofaaru island (the Maldives).
- EIC Accelerator Funding

## Expanding - SIDS and Europe's islands

By making use of large hotel chain networks with a presence in the Maldives and targeting SIDS and Europe's islands with ambitious renewable targets.

# 2023-24 2026 - 27 2022 2025 2028

## Funding

Secure pre-seed funding to match Energy Catalyst Grant (€0.34 m)

## Expanding – Maldives and Fiji

By selling directly to sustainable island hotels and energy companies such REM, STELCO and FENAKA.

## Expanding -Coastal Areas

By entering the market as cheaper, better and non-land-intensive alternative to conventional, localised renewable energy systems.

# **Our Progress**

## **Milestones Achieved**

- Working Prototype built and tested at the Imperial College Advanced Hackspace
- Revolutionary concept using VAT for Wave Energy Conversion with no moving parts in saltwater validated
- Built a World-Class Team
- £1.2 m funding from **Innovate UK** and the **Energy Catalyst** for the develop our technology.
- €0.34 million strategic investments obtained from SFC Nominees, Ltd. (€105,000), KCP Nominees, Ltd. (€180,000), and smaller investors.
- First full iteration of the **Design Completed** and currently being tested at the **Ocean Basin at the COAST Lab**
- **2 patent** acurrently being drafted with the support of Venner Shipley Submission expected in late 2023
- Pilot 60 kW Installation scheduled for May 2024 in the Maldives

## **Working Prototype**



### **Supported By**



## Early UK and International Commercial Traction

CORPORATION LIMITED CORPORATION LIMITED CORPORATION LIMITED CORPORATION LIMITED CELTICSEAPOWER CELTICSEAPOWER WavEC

# The Numbers & Raise

**Business Model (Revenue Streams):** 

- **1. Sales of energy:** through PPAs and transfer after 2- 3 years
- 2. Sales of Power Platforms: Turn-key to power producers and plant components to engineering contractors.
- **3. Service contracts:** Erection, operation, maintenance and revamping services.
- 4. Spares parts and after sales assistance: spares, repairs or modifications upon request.



----Costs of goods Leased and Sold -----Total Expenses -----Total Revenues (Including grants) ------Net Profit

#### Proforma Profit and Loss Proejctions

## **Meet the Team**



Spacecraft engineer at Imperial College London experienced in offshore wind turbines aerodynamics optimisation and solar energy projects.

Martim Cunha, BEng Founder & CEO





#### Andrew Hine, MBA, CPA Strategic Advisor

30+ years' experience in starting and scaling renewable energy startups. Accountant and MBA who specialises in strategic business development.

#### Christos Christou, MEng, MBA Strategic Advisor and Investor

Harvard MBA, 33+ years as management consultant, senior banker, and principal investor, non-executive director and board member across different industries.



Dr Aude Mulard, PhD, MSc

СТО

MSc from the Ecole des Ponts

ParisTech and a PhD from the

University of Cambridge. She

leads the structural development

of our product range.



Ryan Lin, MEng Lead Simulations Engineer

MSc in Engineering Fluid Mechanics for the Offshore, Coastal and Built Environments. High experience in complex assemblies in marine environments designing and manufacturing.



**Change Officer** 



Jiawen Loo, BSc, MScGiEnvironment & ClimateLe

Gleb Smantcer , MEng Lead Electrical Engineer

BSc Ecology and Environmental Biology and MSc Climate Change, Management, and Finance from. She develops AEON's sustainable renewables solutions. First-class degree in Biomedical Engineering with extensive experience in engineering start up













