



EUROPEWAVE

# MARMOK-Atlantic

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**IDOM**



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



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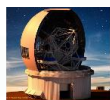
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# Introduction

## IDOM Consulting, Engineering and Architecture



Science



Transport



Energy



Environmental



Industry



Telecom



Building



Consulting

- Since 1957
- 3500+ employees
- 40 Offices in 125 countries (Headquarters in Bilbao)
- Employee owned, 700+ partners

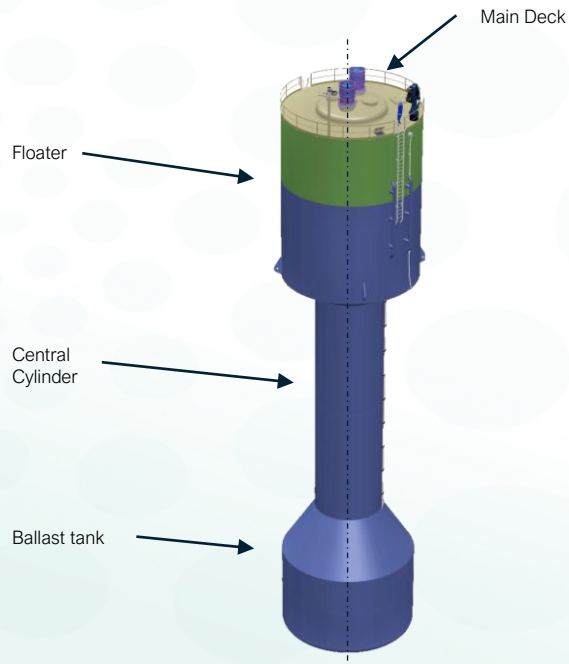
## MARMOK WEC Technology

- **12 years' experience** in marine renewables.
- Started with the development of a **spar-type OWC** wave energy converter
- Technology with outstanding **simplicity, robustness** and **maintainability** (single moving part, not submerged)
- **Viability** of the technology **demonstrated** offshore during 2.5+ years (**3 consecutive winters**)

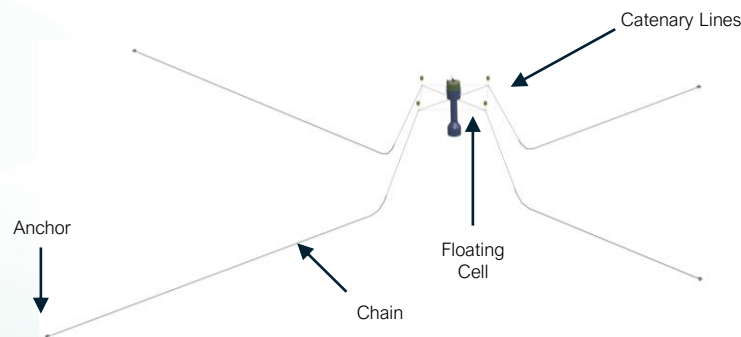


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**Aim:** “Improve the power performance of the system while maintaining its high robustness, maintainability and reliability”

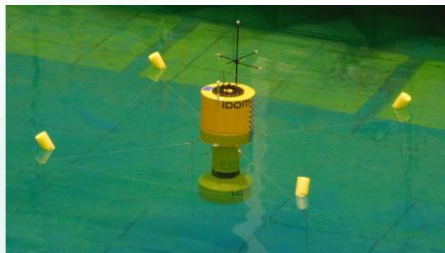
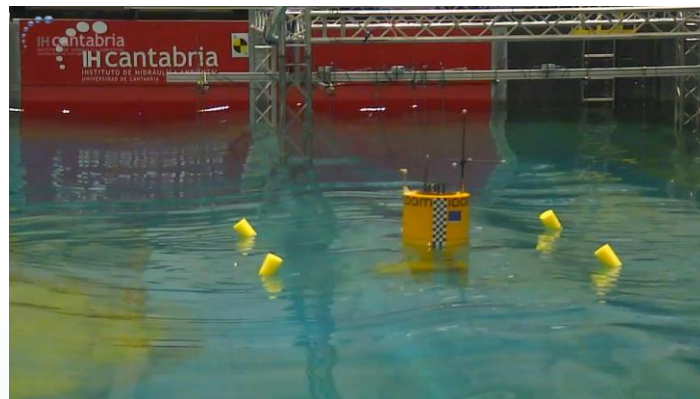
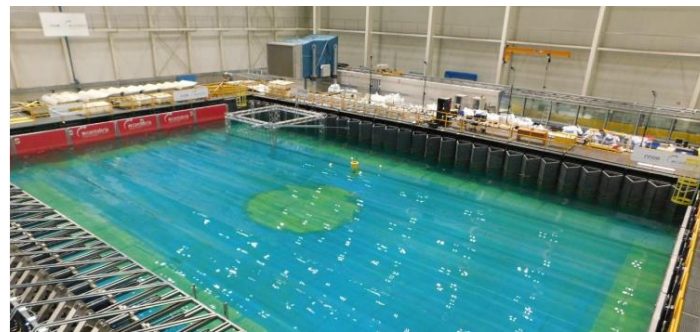


- **Air turbine-electric generator** sets forming the PTO system
- Number of units and size easily **adaptable** to specific locations
- **Hybrid catenary mooring system** with a submerged floating cell for power performance maximization
- Mooring configuration optimized for **array deployment** with significant cost reductions



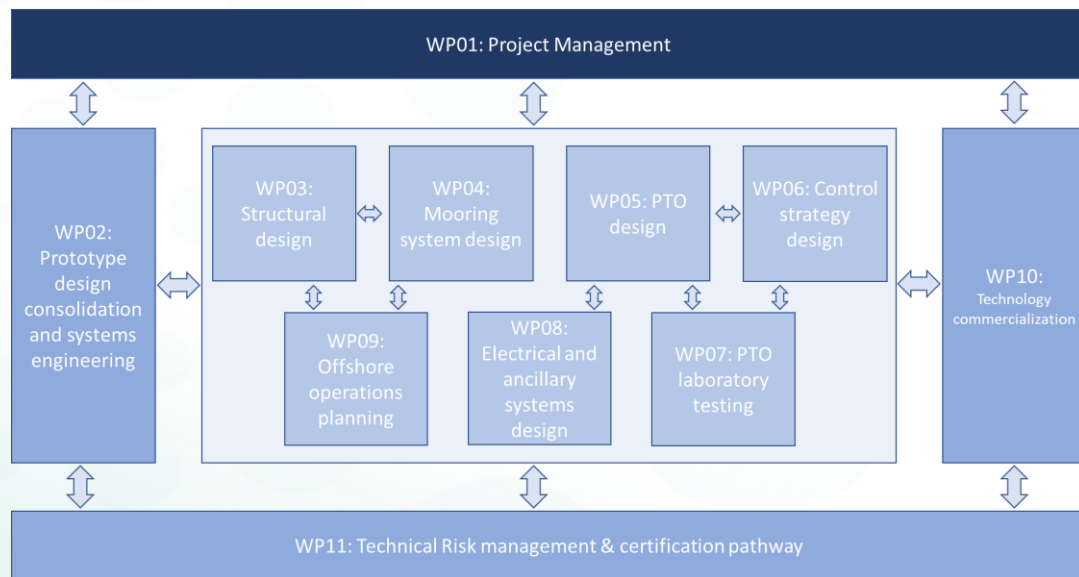
# Phase 1

- Preliminary design optimized for BiMEP and EMEC test sites
- Resulting design (optimized for EMEC while compatible with BiMEP):
  - 10m diameter
  - 35 length
- Extensive testing campaign conducted in IH Cantabria
- 1:23 scale model designed and fabricated in aluminum
- Conducted tests:
  - Decay tests
  - Static offset tests
  - Regular wave tests
  - Irregular wave tests
  - Extreme sea condition tests
- Results matched expectations and validation of numerical tools conducted



## Phase 2

Main effort focused on subsystems with a significant influence in the overall system performance; **PTO & Control**



**tecnal:a**  
MEMBER OF BASQUE RESEARCH  
& TECHNOLOGY ALLIANCE

**MONDRAGON**  
UNIBERTSITATEA

**CoreMarine**

**DNV**

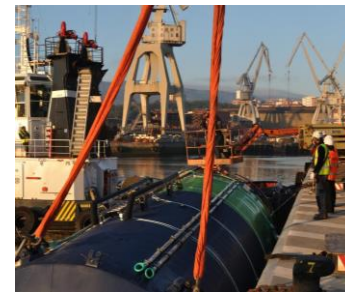


Currently **consolidating the design** according to Phase 3 constraints for **PDR-P2**



# Phase 3 ambition

1. Demonstration of the improved power performance of the overall system achieved through Phase 2 innovation
2. Confirmation of the high robustness, maintainability and reliability of the technology
3. Demonstration of the optimized marine operations
4. Advance on the pathway for future technology certification





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