

# Wave Energy Scotland Annual Conference, 28 November 2017

## Elevator Pitches

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### Attenuator Cost of Energy Reduction – NWECC Stage 2 (ACER 2)

Andy Hall

4c Engineering



# ACER 2 – NWECC Stage 2

## Project Summary

- Concept engineering of full-scale Sea Power Platform
- Numerical modelling – geometry optimisation and PTO damping study
- Tank testing – load testing @ 1:50 and performance testing at 1:25 scale
- FEED of open water prototype

## Technical product or integration offering

- Sea Power Platform – hinged raft attenuator WEC

## Challenges

- Pontoon construction cost reduction
- Moorings & device installation techniques
- PTO – low-speed/high-torque
- Power conditioning for grid compatibility

## Skills expertise or technology required

- Plastics or composites expertise for pontoon construction
- Moorings/cabling expertise, especially quick-connect solutions

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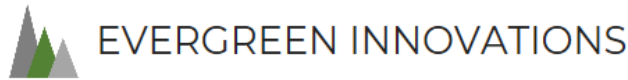
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### WES Checkmate NWECC Stage 2 project

Adrian de Andres - Project Manager

Checkmate



# Checkmate NWEK Stage 2 project



## Project Summary

- *2 successful test campaigns at Flowave and HMRC (Cork) with high performance*
- *1 additional test in Strathclyde for early 2018*
- *Detailed design phase ongoing*

## Challenges

- *Complex Physics / Numerical Modelling*
- *Full Lifecycle Rubber Engineering*
- *PTO coupling and Optimisation*
- *Manufacturing issues*

## Technical product or integration offering

- *Utility scale bulk electricity generation*

## Skills expertise or technology required

- *Deformable body numerical modelling*
- *Materials Engineering*
- *Rubber Manufacturing*
- *PTO*
- *Scale test site*

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### Mocean WEC: next-level hydrodynamics & engineering

Chris Retzler

Lead Contractor



Logos of other contractors



# Mocean WEC: next-level hydrodynamics & engineering



## Challenges

- *Nonlinear wave effects*
- *Structural costs*
- *PTO costs*
- *Controls*

## Technical product or integration offering

- *Hinged raft prime mover*
- *Complex hydrodynamics*
- *High power to mass ratio*
- *Rotational electrical power train*
- *Reliability and survivability*

## Skills expertise or technology required

- *Higher-order numerical modelling*
- *Alternative materials (concrete)*
- *Inexpensive PTO*
- *Control algorithms*