

**Key Findings:**

Exceedence were able to conduct the following modelling and analysis:

- Current public available information puts LCOE of wave energy in excess of £300 per MWh.
- The target from WES is for farm scale wave energy to reach £150 per MWh by the time the sector reaches maturity (1GW cumulative deployment)
- LCOE for Blue Horizon with nth of a kind costing puts LCOE below the WES target.

“It’s great to avail of the Exceedence software and the expertise their team of advisors bring to this sector.”

For more information on Mocean Energy Ltd. please visit:

[www.mocean.energy/about-mocean/](http://www.mocean.energy/about-mocean/)



For more information on Exceedence FINANCE please visit:

[www.exceedence.com](http://www.exceedence.com)



Concept image of Blue Horizon, Mocean Energy’s utility scale machine. Image courtesy of Mocean Energy.

## Exceedence FINANCE

### Case study: Mocean Energy Ltd.

#### Making the case for cost reductions in Wave Energy technology

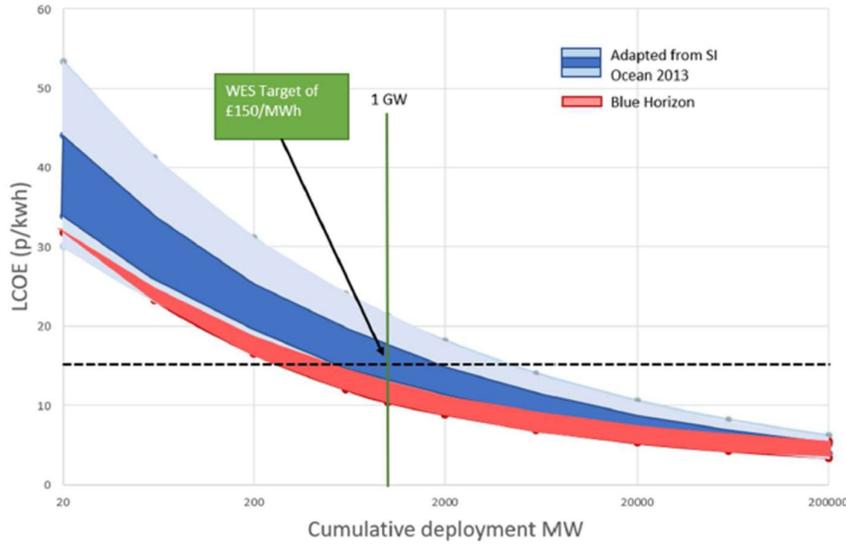
Mocean Energy Ltd. is a wave energy technology developer whose aim is to “harness the power of the waves and accelerate the transition to a zero-carbon world”. Through support from Wave Energy Scotland (WES), Mocean have developed their Blue X device, a prototype model currently deployed at EMEC for extensive testing in real sea conditions.

One of their deliverables to WES was to provide an LCOE modelling and analysis report on farm applications for their utility scale concept, Blue Horizon. Exceedence Ltd. was able to support Mocean Energy Ltd in completing this deliverable in 2020/2021 as a service provided by the Marine Energy Alliance (MEA) programme.

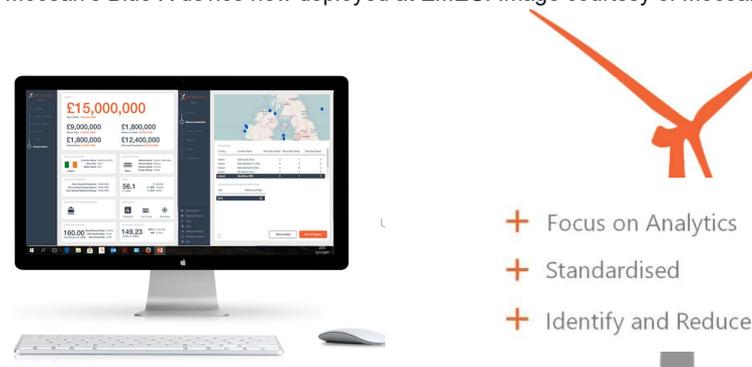
The service consisted of techno-financial modelling and analysis, which was done using Exceedence FINANCE. The aim was to investigate LCOE ranges from a first of a kind device compared to an nth of a kind device in a 100MW farm, where global cumulative deployment has

reached maturity in excess of 1GW. Analysis also included identifying key cost drivers and investigate a potential cost reduction pathway.

Mocean Ltd. provided Exceedence Ltd. with the first of a kind CAPEX Cost. Other inputs such as lifetime, availability, OPEX, decommissioning and discount rate are based on most applicable information from publicly available sources. The baseline LCOE for the Blue Horizon is in excess of £300, in line with what is seen in public reports. The top 5 key cost drivers were identified to be yield, total CAPEX, discount rate, Total OPEX and lifetime. A potential cost reduction pathway identified that there are significant cost reduction opportunities both as a technology developer, but also as a sector. The graph overleaf, shows the Blue Horizon device potential LCOE as compared to the sector, with learning rates applied. With the right supports, Mocean’s Blue Horizon is well on its way to meet LCOE targets.



Mocean's Blue X device now deployed at EMEC. Image courtesy of Mocean Ltd



- + Focus on Analytics
- + Standardised
- + Identify and Reduce Risk

“Exceedence and the business intelligence they have of the sector confirms what we are seeing as well, which for us is very encouraging for the continued development of our technology”

– Cameron McNatt, Managing Director



**Key benefits of Exceedence**  
**FINANCE:**

**Accurate financial metrics**

Financial projections based on detailed engineering models and real-world wave resources

**Accelerated project development**

Screen out weaker concepts earlier, and accelerate the development and refinement of innovative designs with genuine prospects

**Design optimisation**

Explore potential advances in energy generation and identify opportunities for cost reduction

**Detailed understanding**

Key insights into annual energy production, local power fluctuations, loads in structural members and fatigue life expectancy, based on detailed engineering simulation

**Clarity**

Complete transparency of both financial and engineering design processes

**Consistency**

Suitable for all stages in the design process, from concept development, to model scale prototypes, and right through to full scale versions

**Unlock investment**

Increase investor confidence by de-risking projects

**Recognised by industry**

Validated via industry case studies and technical papers

**Environmental and societal benefits**

Reduces entry barriers to new developers and facilitates growth of wave energy sector in general