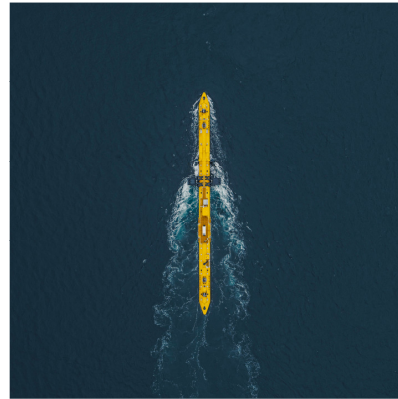


# Standardisation of testing and assessment procedures

Eileen Linklater  
Corporate Affairs Director

## An innovation catalyst pioneering the transition to a clean energy future



Reducing the time, cost, and risk of  
integrating ocean energy and associated low carbon technologies  
into the future energy system

### Ocean energy demonstration sites

- 1 **Fall of Warness**  
Grid-connected tidal test site
- 2 **Billia Croo**  
Grid-connected wave test site
- 3 **Shapinsay Sound**  
Scale tidal test site
- 4 **Scapa Flow**  
Scale wave test site
- 5 **Floating Wind**  
Grid-connected floating wind test site (planned)

### Hydrogen demonstration sites

- 6 **Caldale**  
Hydrogen production and storage plant  
Vanadium flow batteries
- 7 **Kirkwall Pier**  
Fuel cell
- 8 **Kirkwall Airport**  
Combined heat and power unit (CHP)

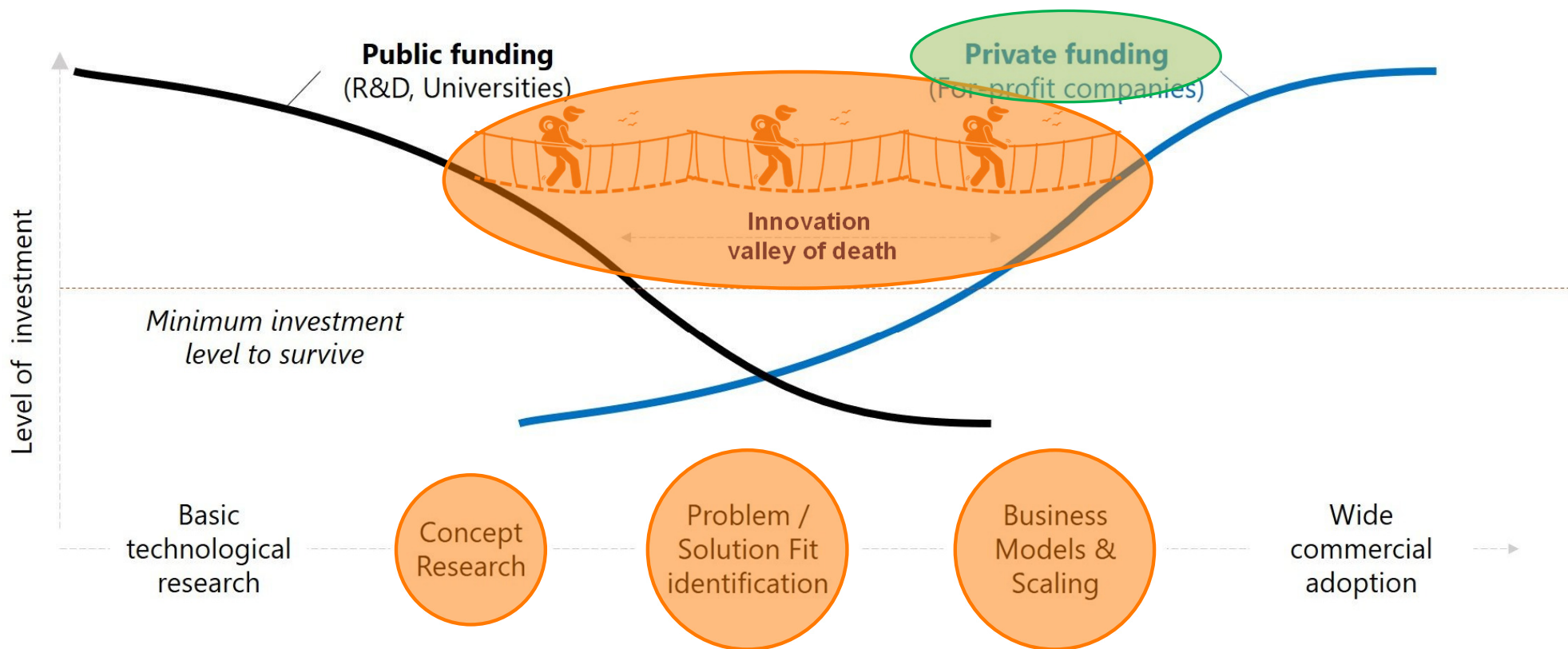
### EMEC offices

- 9 **Stromness**  
Headquarters
- 10 **Kirkwall**  
Satellite office



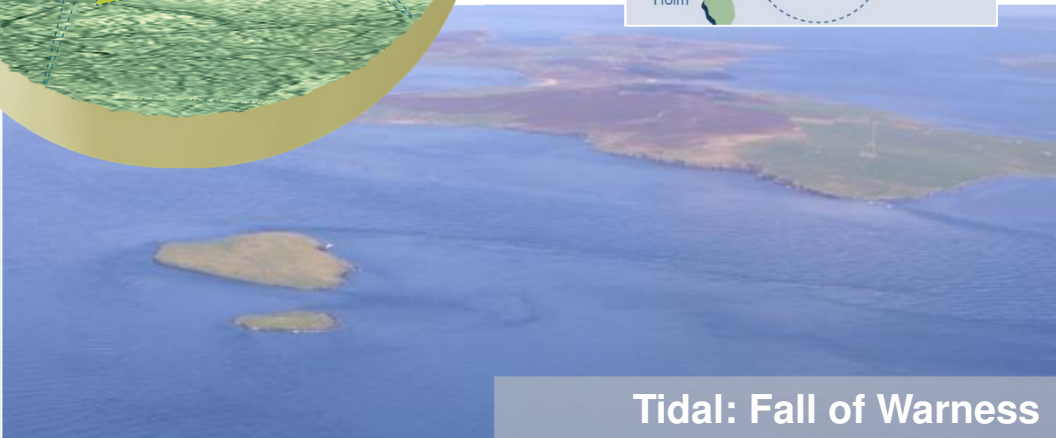
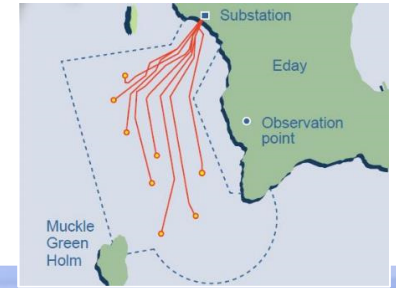
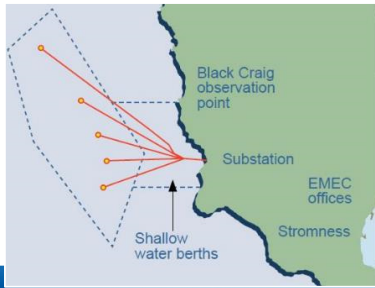
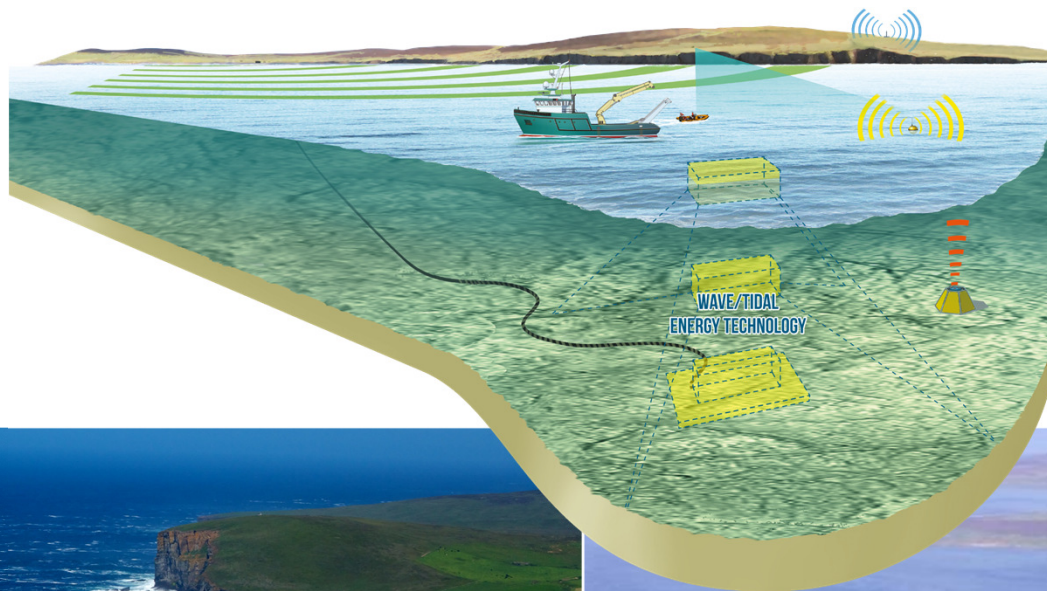


# Bridging the innovation valley of death





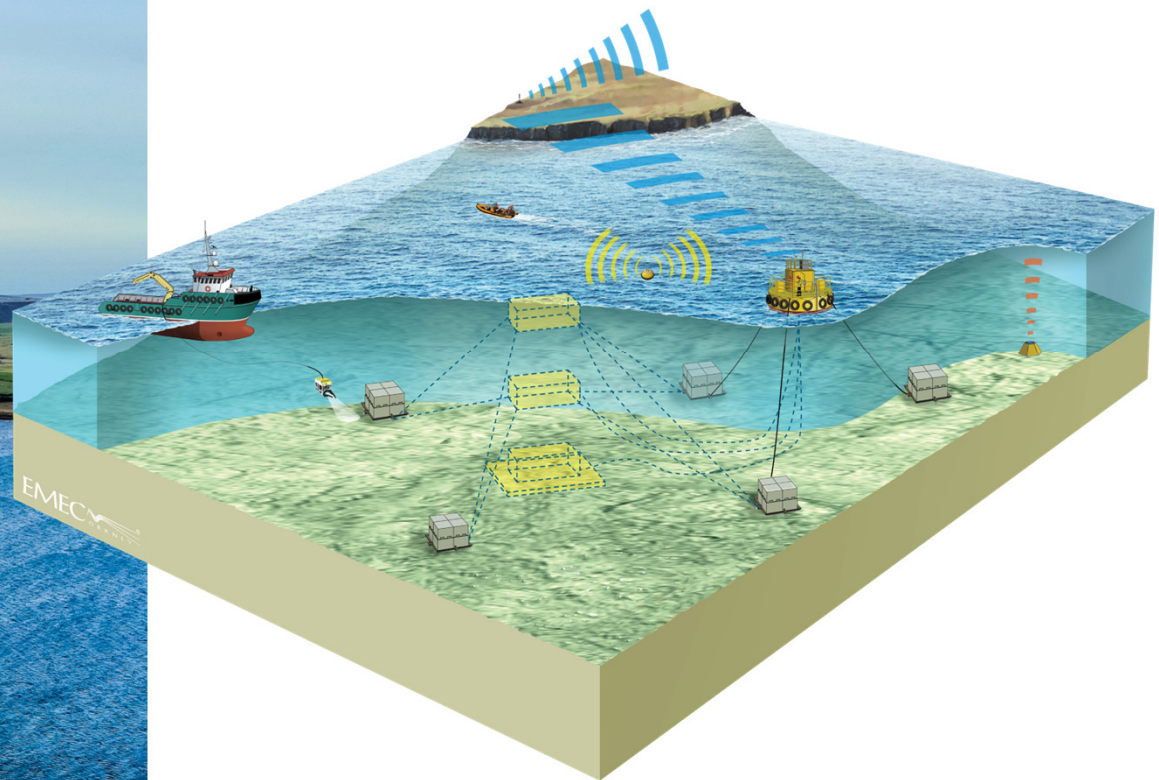
# Grid connected test sites



Wave: Billia Croo

Tidal: Fall of Warness

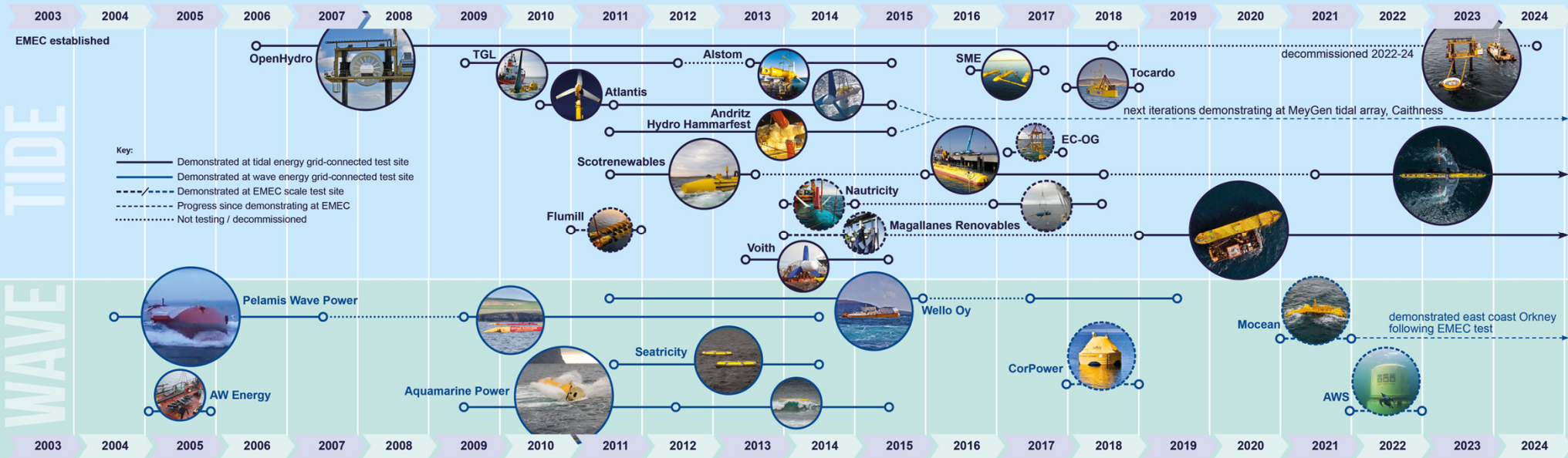
# Scale test sites





# The past 20 years at EMEC

## TIDAL TECHNOLOGY DEMONSTRATIONS AT EMEC



## WAVE TECHNOLOGY DEMONSTRATIONS AT EMEC



**35** • **22** • **11**  
 devices • developers • countries



# Case study: the value in testing and demonstration

2010



2011-13



2016-18



2021-24+





Reducing time, cost and risk

**EMEC**  
THE EUROPEAN MARINE ENERGY CENTRE LTD



Environmental monitoring



Subsystems



Tool development



Components

# Our accreditations

## Independent verification of performance data

- EMEC is accredited to:
  - ISO 17025 Testing
  - ISO 17020 Inspection
  - ISO 9001 Quality Management
  - ISO 14001 H&S Management
  - ISO 45001 Environmental Management
- World's first and only ocean energy facility with **Renewable Energy Testing Laboratory (RETL)** status





# Testing and inspection

## Power Performance Assessment (ISO 17025 Testing)

- [IEC TS 62600-200:2013](#) | for **tidal energy** converters
- [IEC TS 62600-100:2012](#) | for **wave energy** converters



## At sea inspection (ISO 17020)

- Power Performance Assessment
- TRL 5-7 (quarter to full scale) not grid-connected.
- Path to ISO 17025 performance assessment.

## Tank test inspection (ISO17020)

- Power Performance Assessment, plus
- [IEC TS 62600-10:2021](#) | for **mooring systems**
- [IEC TS 62600-202:2022](#) | [IEC TS 62600-103:2018](#) for early-stage development of wave and **tidal energy** converters / testing of pre-prototype scale devices

## Benefits:

- Enhanced credibility
- Standardised methodology
- Improved decision making
- Early issue detection
- Market advantage
- Reduced risk
- Greater stakeholder confidence



## Renewable Energy Testing Laboratory (RETL) status

- power performance assessment of tidal energy converters anywhere in the world
- in compliance with IEC TC 114 Technical Specifications (via IEC TS-200)

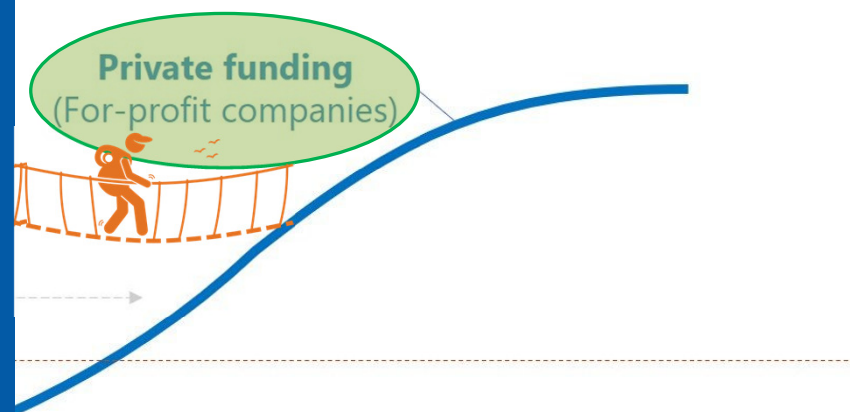
# International collaboration



# Bridging the innovation valley of death

## Benefits of standardised performance testing:

- Enhanced credibility
- Standardised methodology
- Improved decision making
- Early issue detection
- Market advantage
- Reduced risk
- Greater stakeholder confidence



## Recommendations Report

Unsure how to progress? Get in touch and we can provide a recommendations report to explain how to work through the standards to develop your technology, improving your testing plan, and helping you to prove your results.

Contact us for more details: **01856 852060** / [info@emec.org.uk](mailto:info@emec.org.uk).

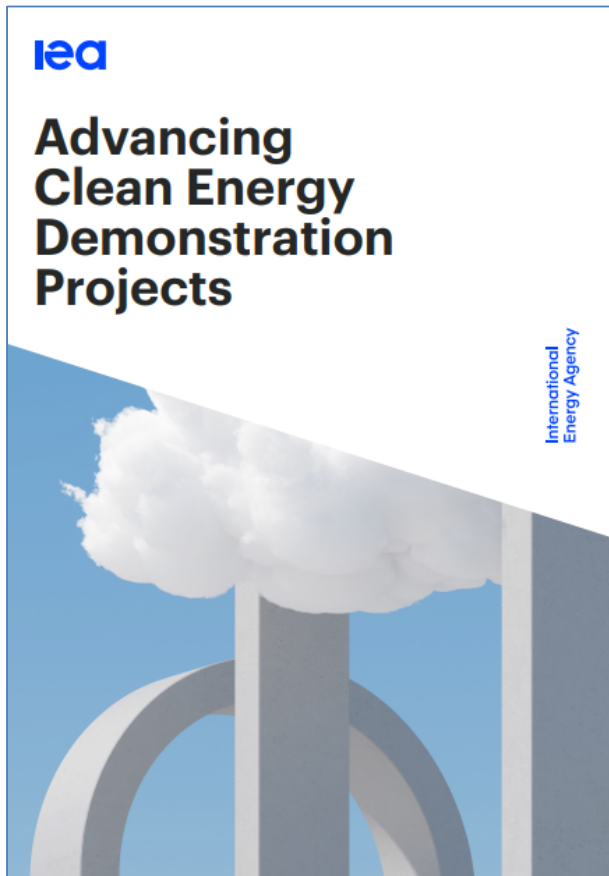






What next?

# Continued need for demonstration



In the 2023 update to the Net Zero Roadmap, the IEA noted that while in the near term almost all emissions reductions can be delivered by technologies and measures that are already known and available, **innovation will be needed through to 2050.** About 35% of the CO<sub>2</sub> emissions reductions needed in 2050 in a scenario consistent with the energy sector reaching net zero in the same year **come from technologies that are still at the pre-commercial stage today.** This includes technologies in emission-intensive sectors such as heavy industry and long-distant transport. While there has been progress in recent years, more innovation is needed to demonstrate these technologies and accelerate their paths to market.

**The demonstration step on the innovation journey can be particularly difficult, especially for large-scale projects, because of the significant risk and capital required to test out certain technologies.** This report provides an update on clean energy demonstrations worldwide based on project-level information featured in the IEA Clean Energy Demonstration Projects Database. It draws on the latest available information on funding and development status for projects across segments

## Recommendations

- 1 **Increase public spending on clean energy R&D and demonstration to address pressing innovation gaps**
- 2 **Create incentives for private-led clean energy innovation**
- 3 **Enhance publicly available tracking mechanisms to deliver on pledges, measure progress and adjust priority-setting**
- 4 **Identify opportunities to improve the resilience and sustainability of clean energy technology supply chains**
- 5 **Accelerate development of enabling infrastructure**
- 6 **Work across borders to de-risk investments in clean energy innovation, especially in EMDEs**



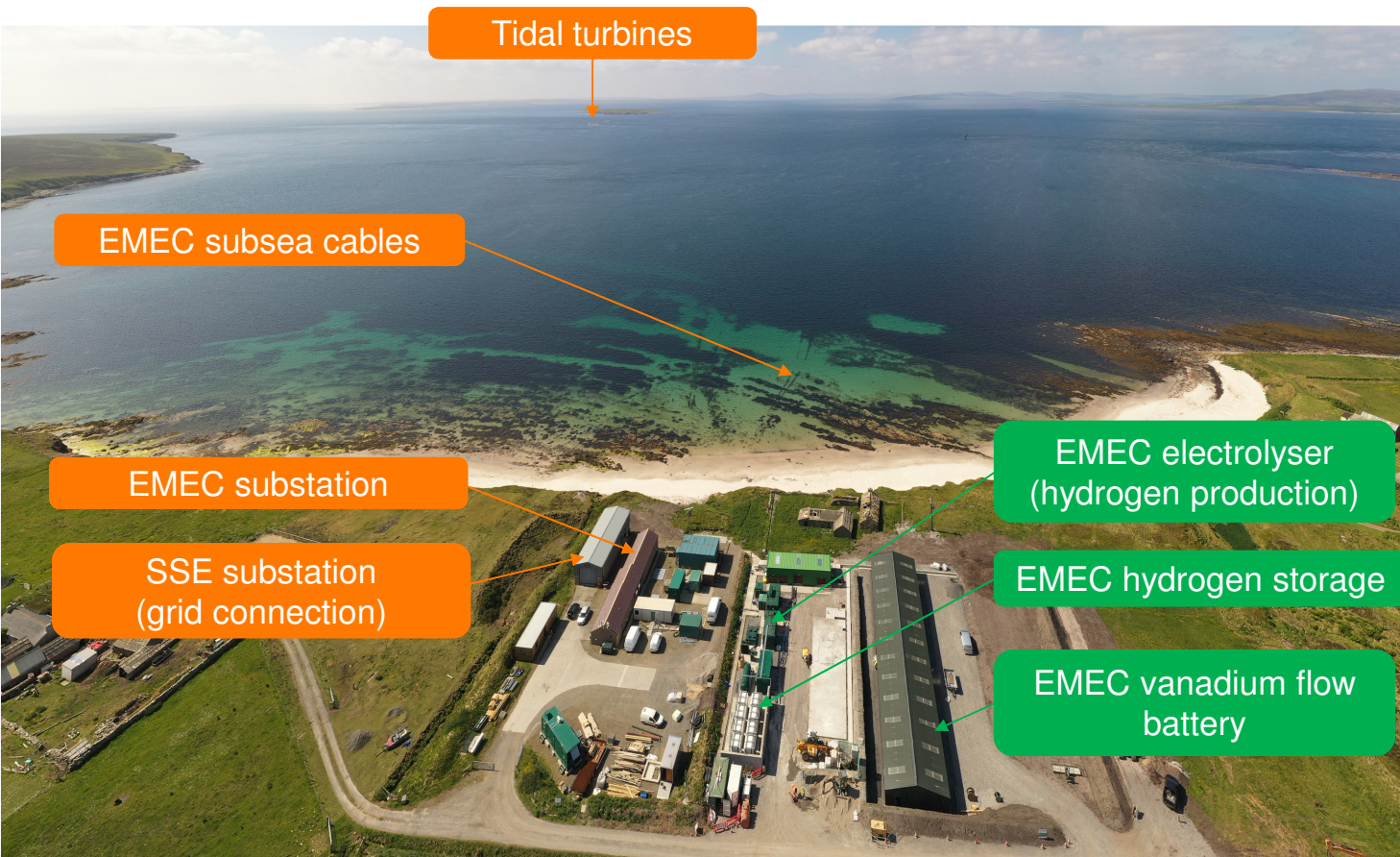
# Site expansion

**EMEC**   
THE EUROPEAN MARINE ENERGY CENTRE LTD

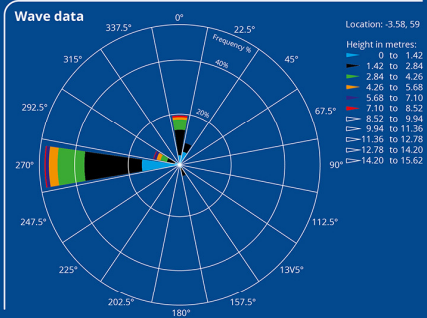
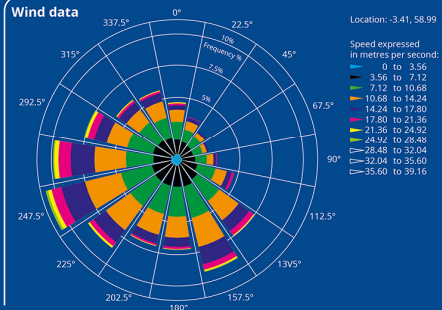




# Alternative offtake: green hydrogen for Efuels

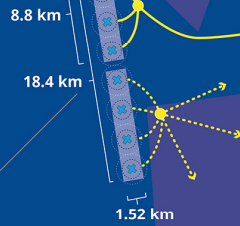
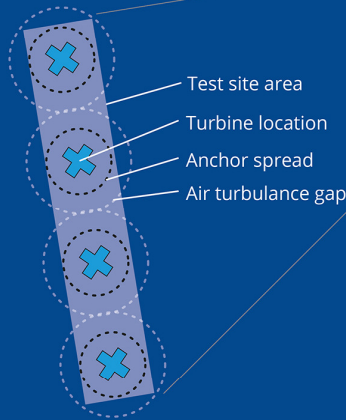


# National Floating Wind Test Centre



**Key:**

- National Floating Wind Test Centre area
- Marine conservation/exclusion zones
- Subsea cable hub
- Subsea cable
- Subsea cable (TBC)







Thank you

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