EMEC - Marine Renewables to Hydrogen

Richard Ainsworth
US Project Engineer

European Marine Energy Centre

EMEC HYDROGEN

Purpose-built, open-sea performance testing facilities for ORE technologies

First in the world, established in 2003

£34 million of public funding

Only IEC accredited marine energy test centre in the world

One of the harshest marine environments

Grid-connected test sites for wave & tidal energy

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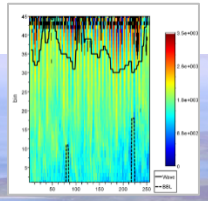
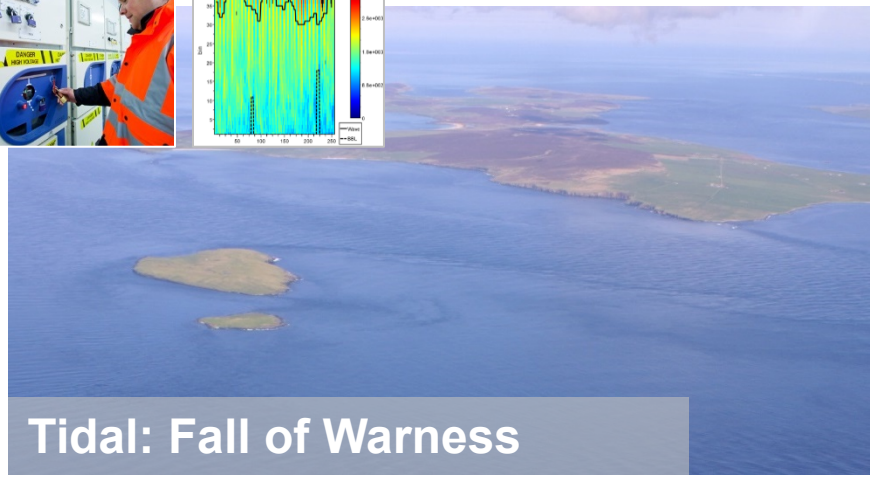
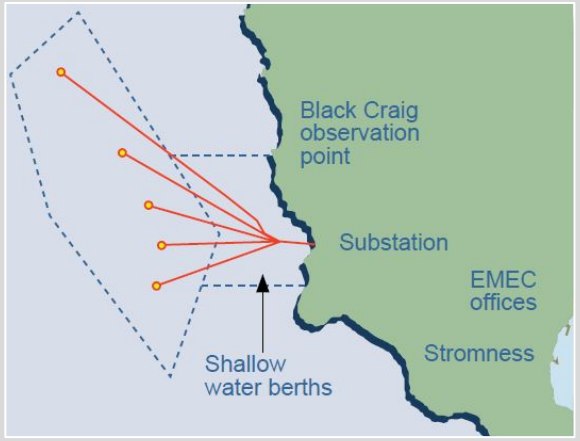
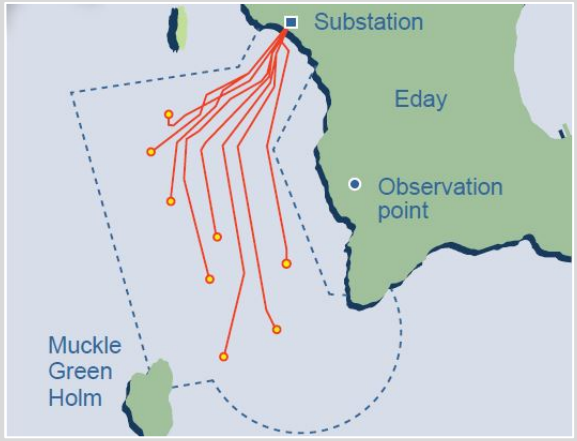
Wave: Billia Croo



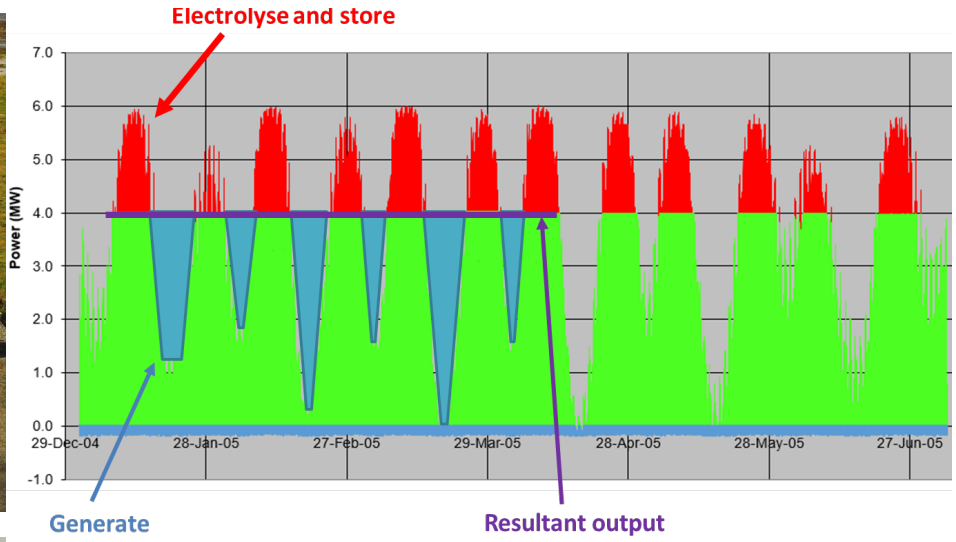


Tidal: Fall of Warness





Initial Deployment



500kW PEM Electrolyser

Additional load independent of grid

Curtailment solution

Orkney | Hydrogen Islands

EMEC HYDROGEN

EMEC has worked with a wide range of key stakeholders to develop a world-leading green hydrogen innovation programme in the islands, bringing significant attention and development opportunities to the community

2016

- 1 project
- 0.5 MW electrolysis
- £3 million funding

2021

- 9 projects
- 1.5 MW electrolysis
- Flow cell battery
- Mobile Refueler
- £20+ million project funding

2024

- Hub for maritime decarbonisation
- Sustainable Aviation Test Environment
- Commercial scale electrolysis
- Demand-driven business cases in heat, power and transport applications

Concept → Demonstration → Commercialisation

Hydrogen R&D Programme

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1. Producing hydrogen via electrolysis

We power our electrolysers using **tidal and wind** generation co-located at our test sites

2. Storing and handling hydrogen

We have demonstrated inter-island transport of hydrogen, and developed **state-of-the-art mobile refuelling** equipment

3. Developing hydrogen use cases to support decarbonisation activities

Our projects have tested new ways of using hydrogen, including in **transport**, in **vans, ferries and aeroplanes**, in industrial **heat**, investigating feasibility for use in **distilling**, and in providing auxiliary **power** to **ferries** while quayside

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THANK YOU

richard.ainsworth@emec.org.uk

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