



ITEG: Integrating Tidal Energy into the European Grid

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Orkney

- Archipelago of 70 islands in North East Scotland
- >22.000 residents
- Known for...
 - World class heritage sites & archaeology
 - Wildlife
 - Renewable energy
 - Weather



World leading test facilities

- £36m public funding
- Not-for-profit organisation
- Independent test laboratory

VISION

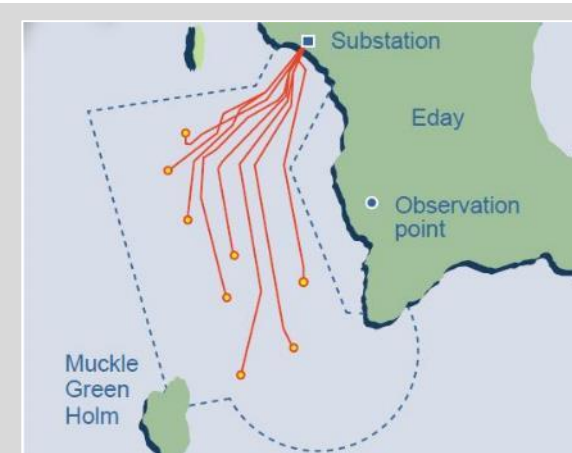
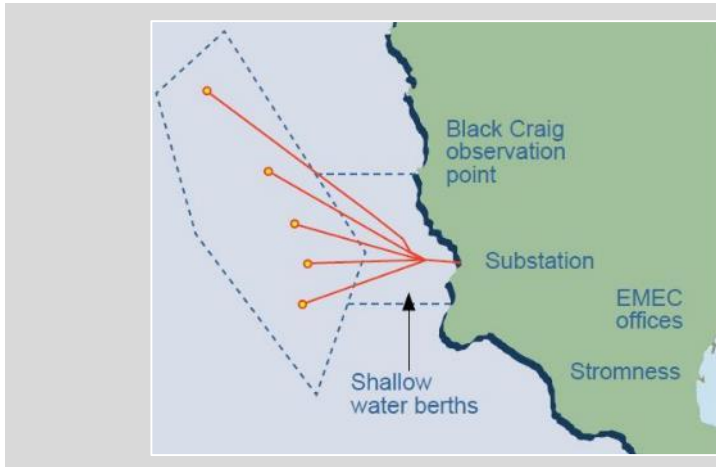
A globally successful marine energy industry as part of a clean energy system

MISSION

To **reduce the time, cost, and risk** associated with the development of marine energy technologies,
maximising the use of our bespoke facilities,
industry knowledge, and unprecedented experience



Grid-connected test sites for wave & tidal energy



Orkney has...

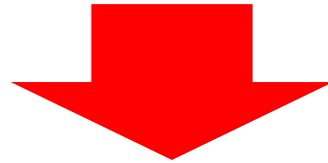


- Big winds
- Big waves
- Big tides

=> Big, cheap electricity
generation potential

BUT....

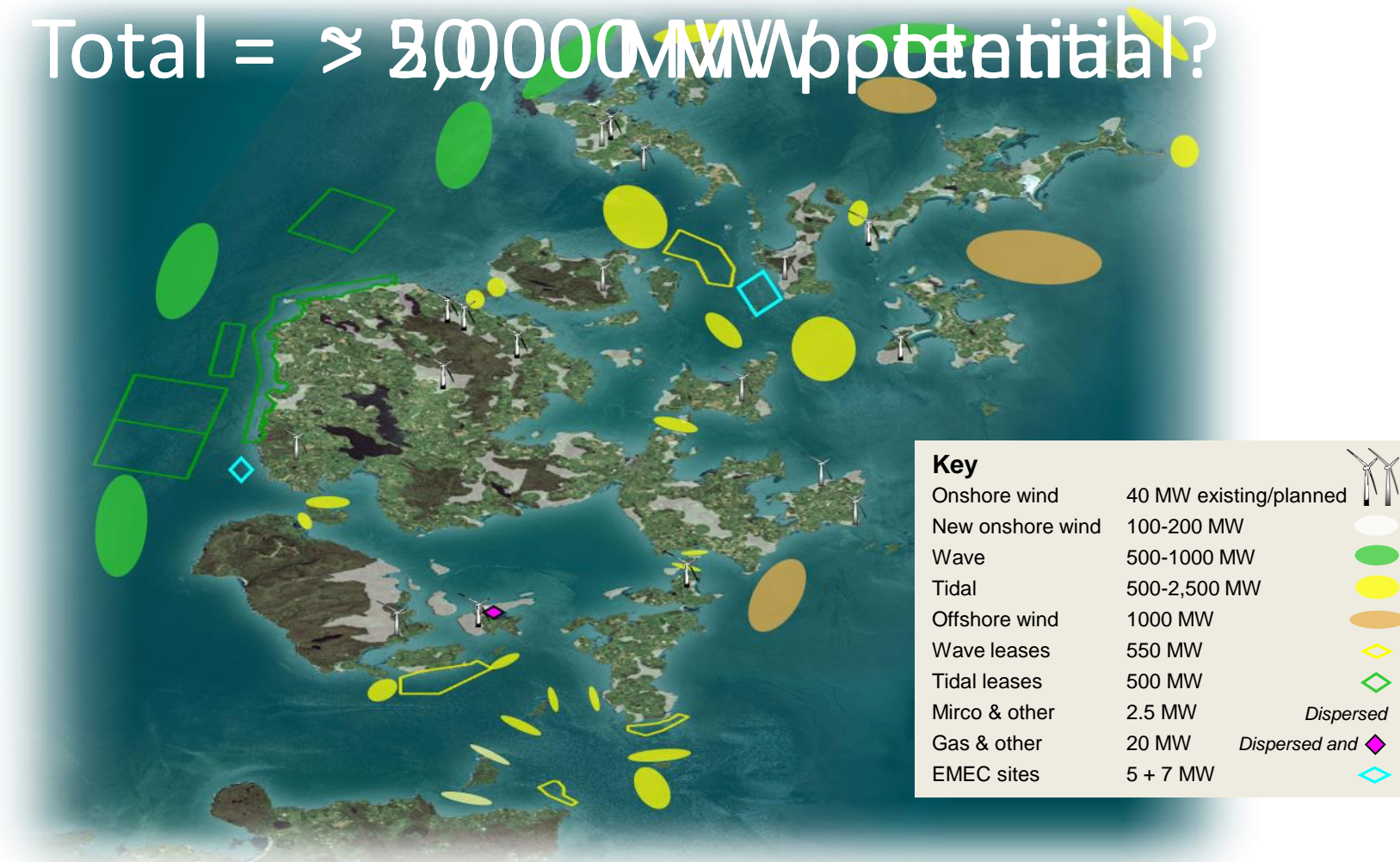
- Constrained grid
- Remote & rural



Energy Storage and Hydrogen

Orkney's Energy Resource

Total = $\approx 20,000$ MW potential?

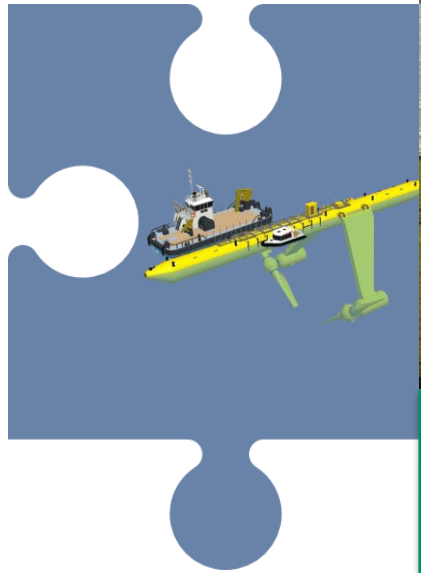


ITEG project

- Clean energy generation in remote areas
- 'All-in-one' holistic energy system
- New market opportunities for ocean energy sector



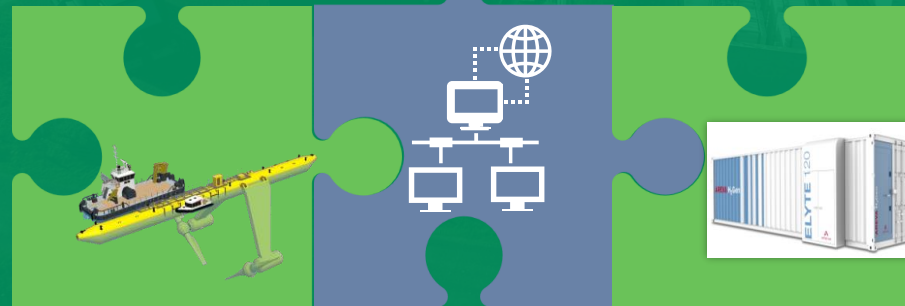
Combined tidal power and hydrogen solution



Orbital O2 2MW
tidal turbine



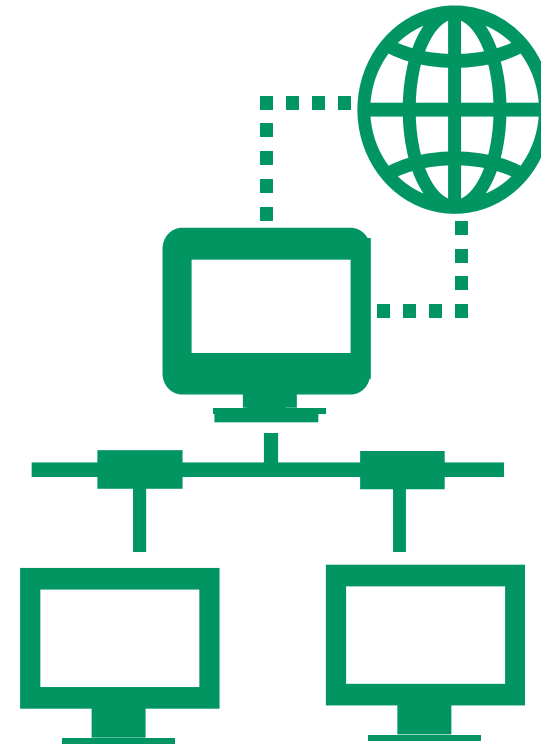
revaH2Gen
500kW
electrolyser



Energy Management System

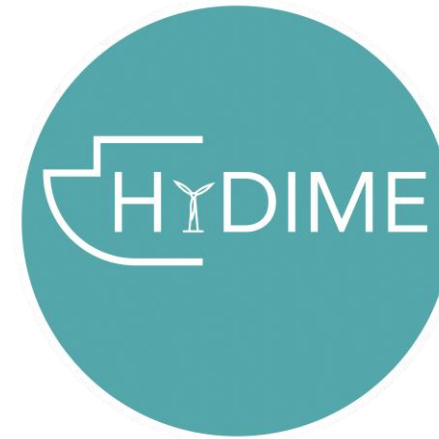


- EMS tender now open on Public Contracts Scotland
- Eol submissions by 17 April 2019
- Link to tender:
<https://tinyurl.com/y5ungrrh>

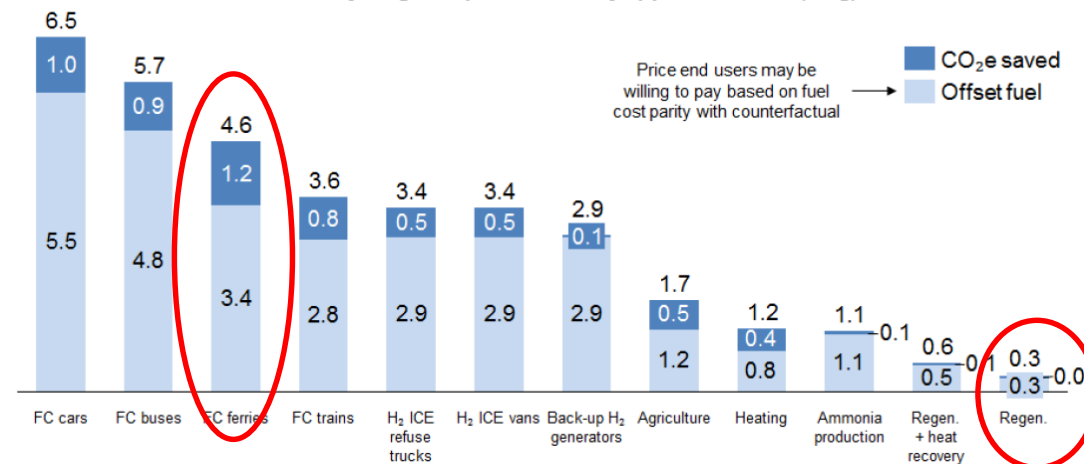


Hydrogen Opportunities

16MWh of diesel
a day



Value of hydrogen at point of use by application area (£/kg)



Source: Xodus/Element Energy study, 2016

Test bed for energy system of the future

- £28.5 million UKRI funded project
- Virtual Energy System interlinking electricity, transport and heat
- Flexible energy balancing technologies demo
 - 500 domestic batteries
 - 600 EVs
 - 200 V2G chargers
 - Doosan hydrogen fuel cell



The future



- Hall 27, Stand L66





Thank you