



ORE Catapult - Cross-sectoral collaboration for SMEs working in offshore renewable energy

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Our mission

*To accelerate the creation and growth of UK companies
in the ORE sector*

Our vision

*By 2023, ORE Catapult will be the world's leading
offshore renewables technology centre*

- Centres of Excellence
- Academic Research Hubs
in partnership with leading universities
- Expanding our assets in Blyth
and Levenmouth
the world's foremost open-access facilities



- There are several aspects of the foundation that are of interest in terms of inspection:
 - Internal corrosion of monopile foundations
 - Scour, including
 - Local scour around foundations and cables
 - Global scour in the wind farm
 - Subsea weld integrity
 - Fatigue Crack Growth
- All of these currently are, or have the potential to be carried out by underwater vehicles.



Opportunity: reducing vessel costs for installation, maintenance, and operation

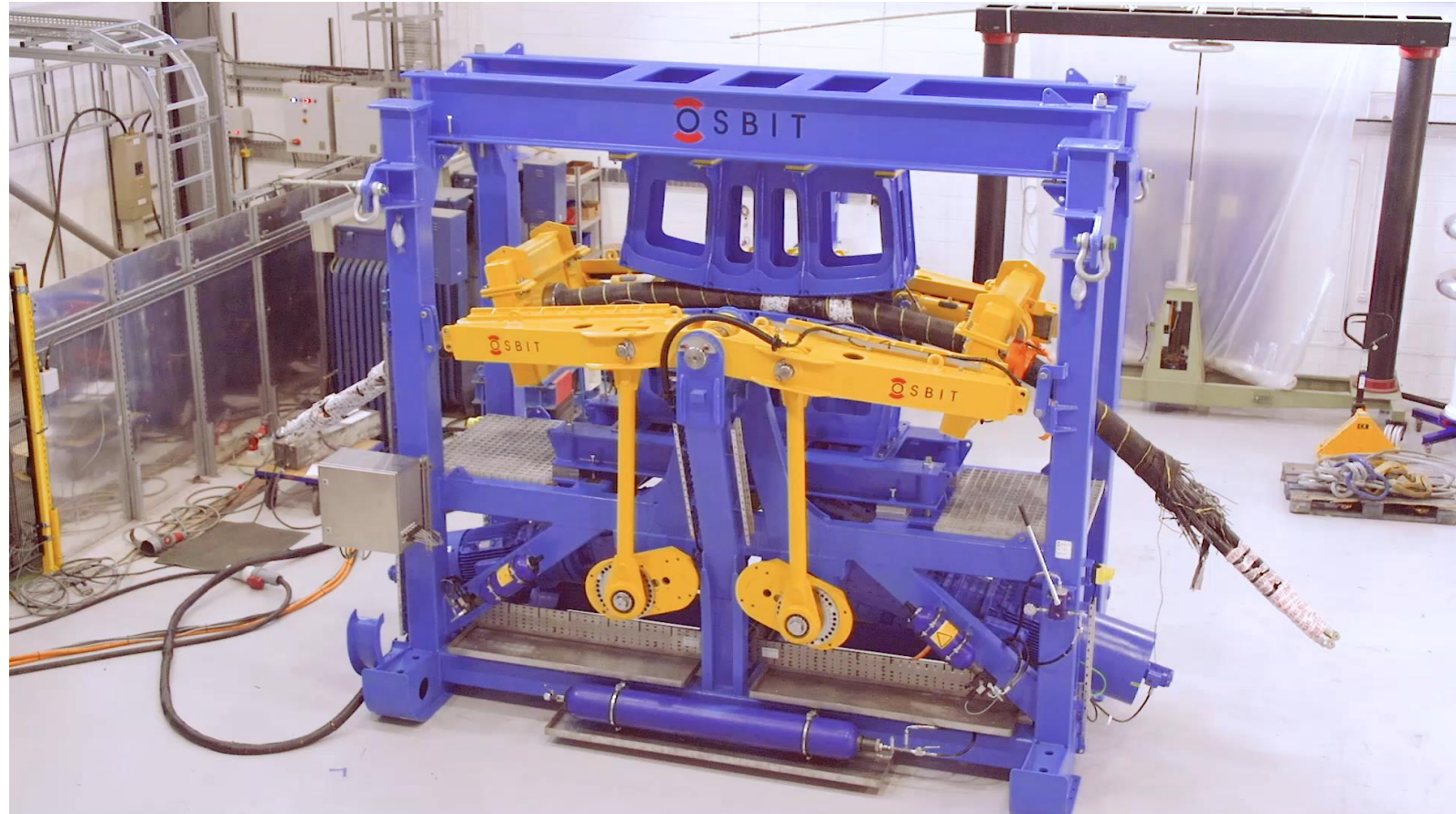
- Large, dynamically positioned vessels are very expensive
- Use cheap non-specialist vessels to reproduce performance of large, expensive vessels
 - E.g. dumb barge in combination with tug vessels



Vessels make a large contribution to installation and operations and maintenance costs

Challenge: - Optimising cable connections within device arrays

- Daisy-chaining vs subsea hubs
- Optimal ways of assessing and analysing cables
 - Understanding dynamic cables
 - Maximising confidence in performance and durability
 - Minimising cost through reducing over-engineering
- Low-cost connectors
 - Reduce installation times, and operation and maintenance costs
 - Reducing costs of wet-mate connectors



ORE Catapult dynamic cable test rig

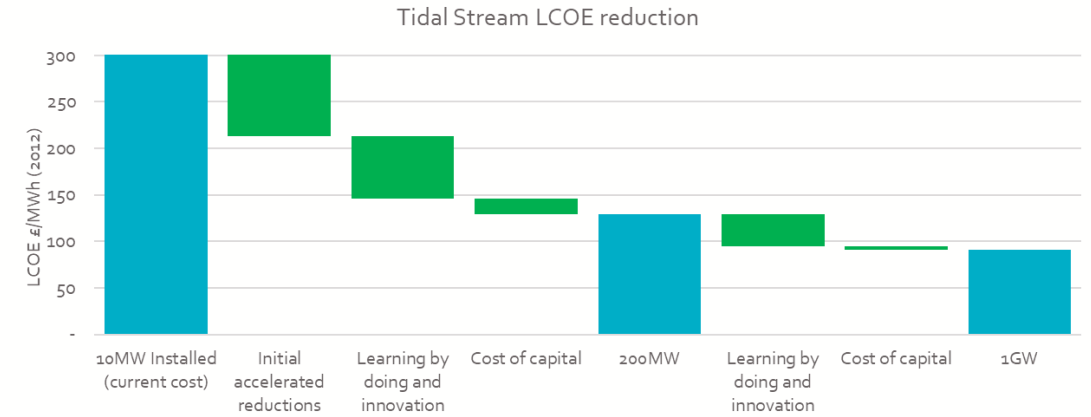
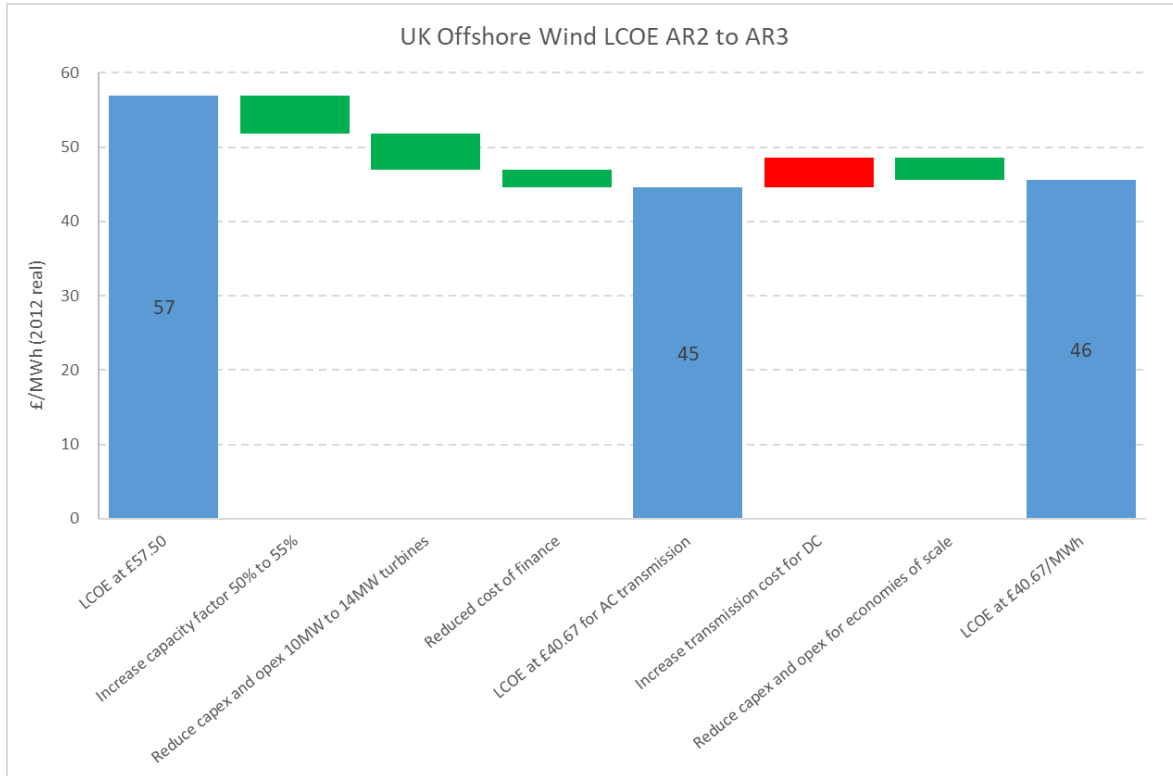
Challenge: Device survival in high energy environments

- Large difference between operating conditions, and storm/maximum wave conditions
- Prediction of how devices will respond to conditions
 - What forces conditions will impart on device
 - Survivability of device – structural loading and survival modes
- Predicting when and how frequently those conditions will happen
 - Wave modelling



Wave energy devices have to be survivable in very high sea states

Common Challenges: Cost reduction pathways



Initial Accelerated Reductions

- Economies of Volume
- Economies of Scale
- Accelerated Learning

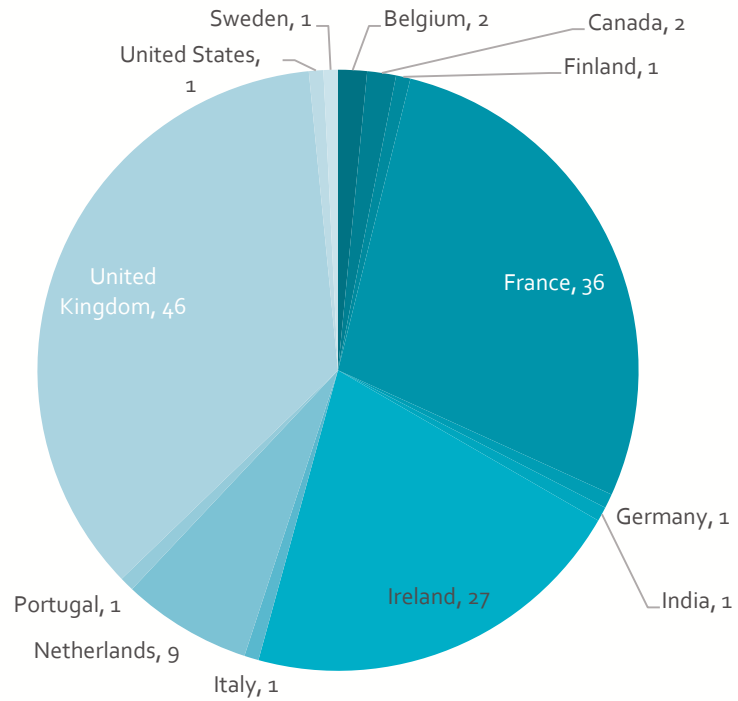
Learning by Doing & Innovation

- Optimised processes & manufacturing
- Real life operational & weather data
- Collaborative shared learning

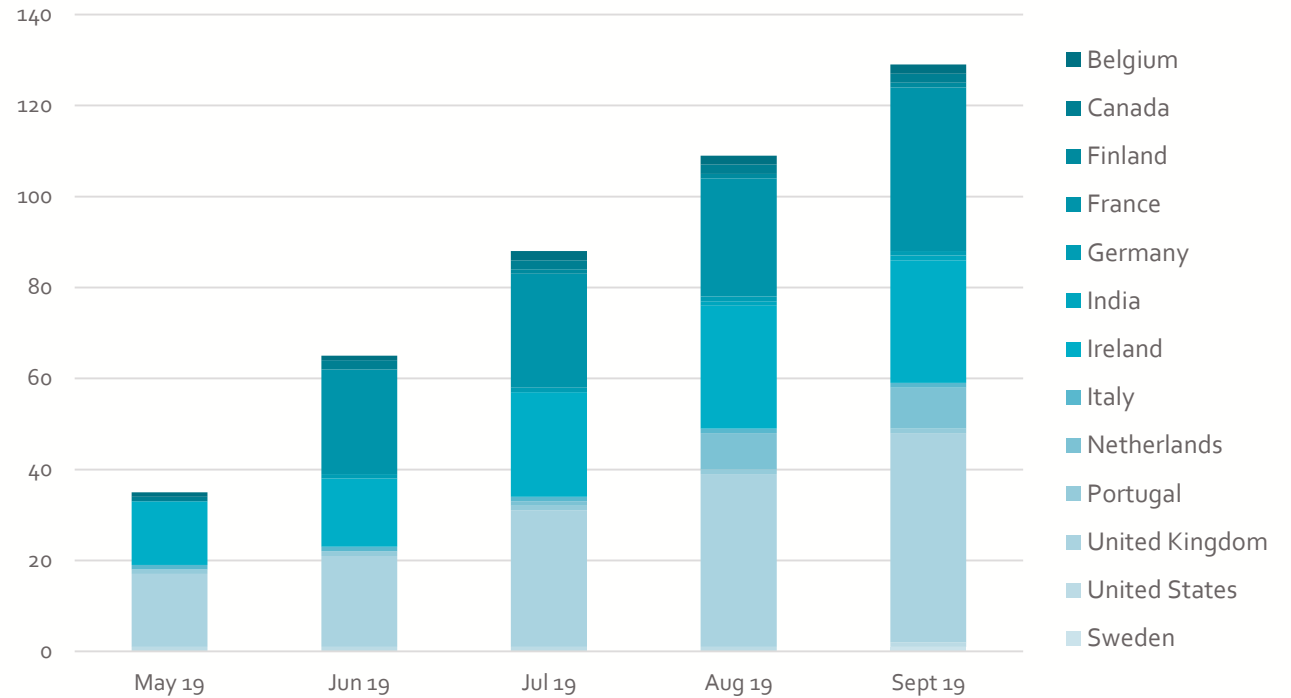
Cost of Capital

- Increase project debt
- Reduce equity risk

LCOE expressed in pre-tax real, 2012



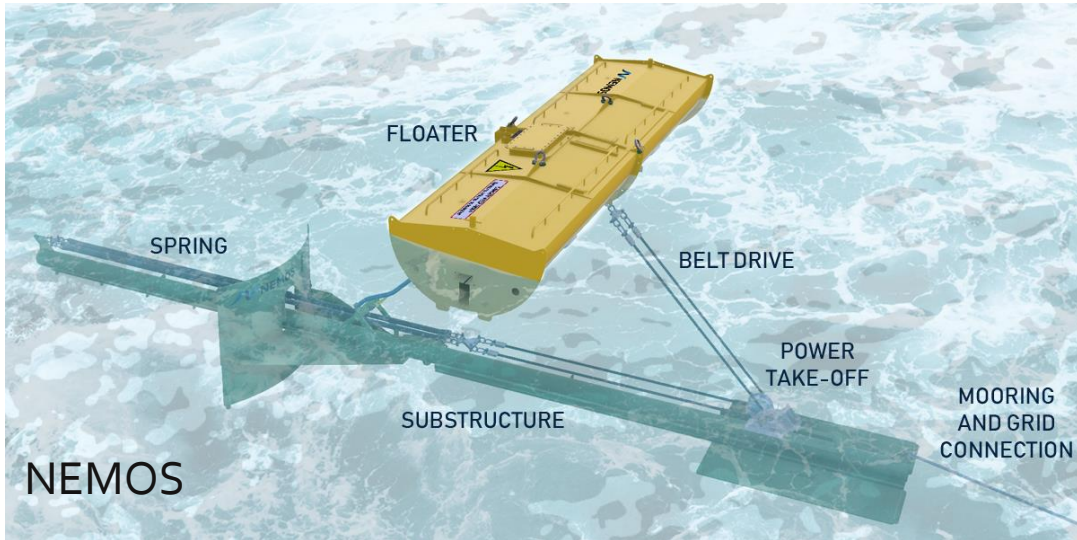
Country of Origin



129 members from
13 countries



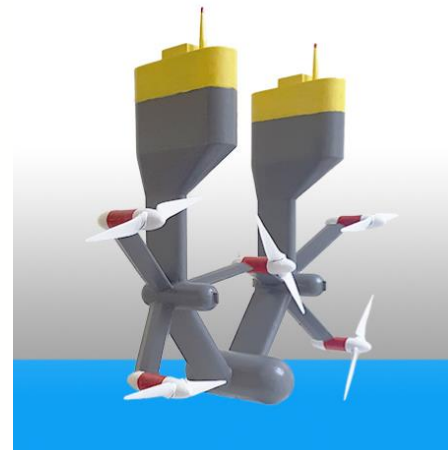
The Ocean Energy Scale-Up Alliance (OESA) aims to accelerate the development of marine energy technologies through strategic partnerships and international collaboration.



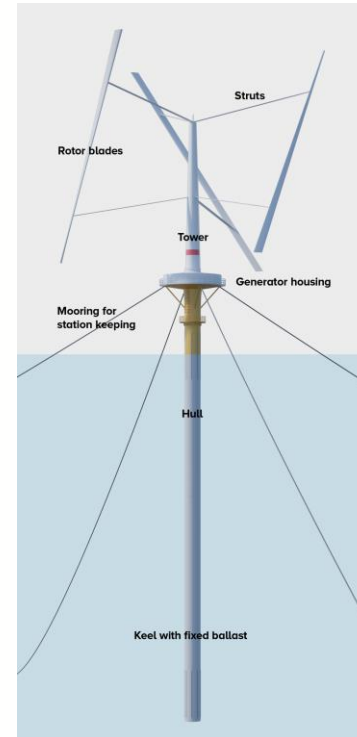
NEMOS



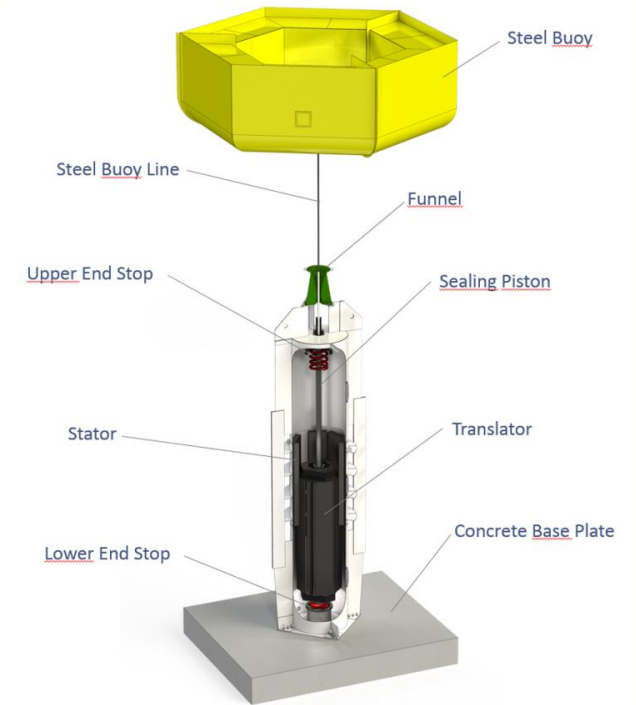
Floating Power Plant



Tocado



Seatwirl

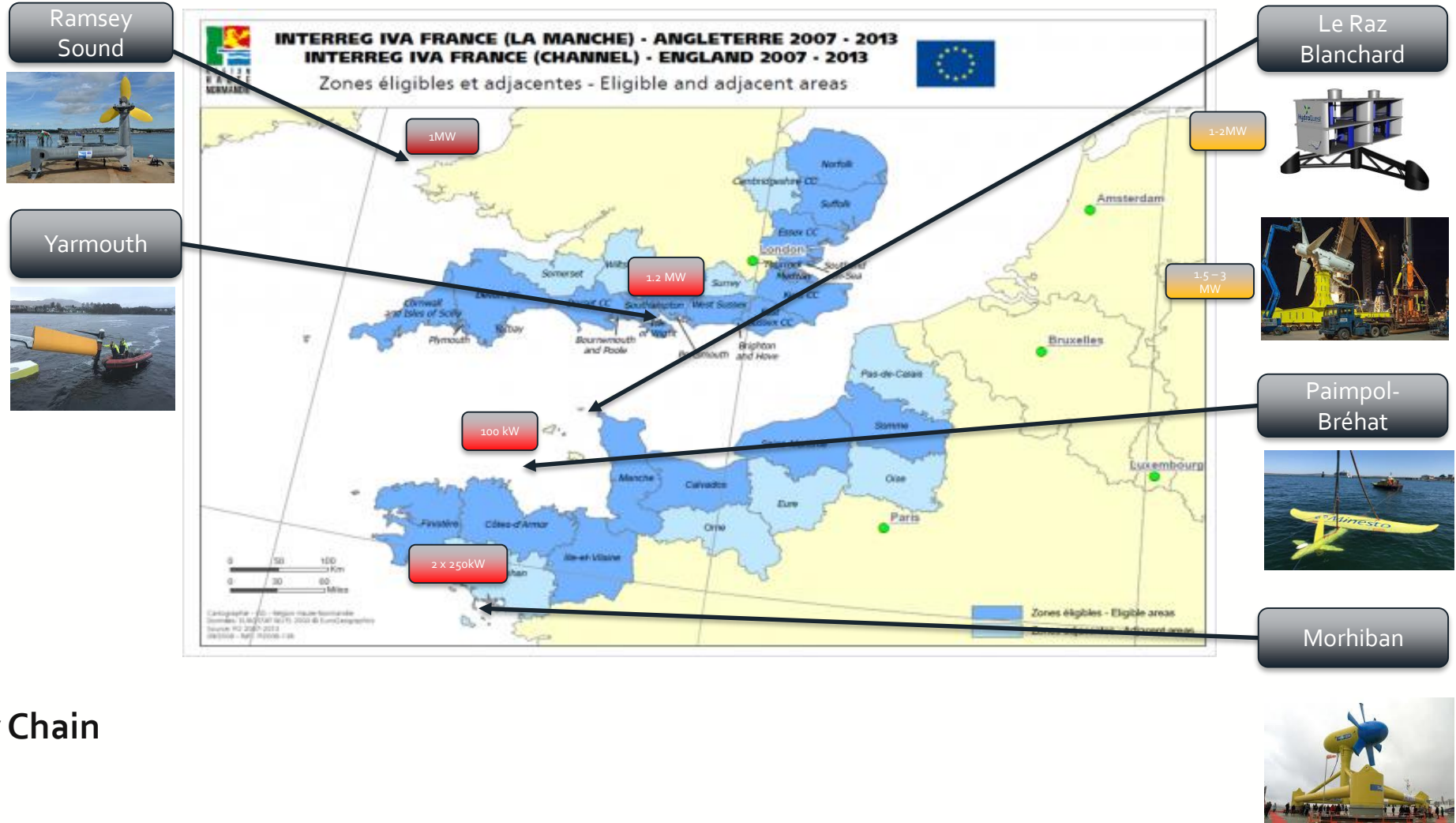


Seabased

Tidal Stream Industry Accelerator (TIGER)

A joint investment to demonstrate commercial potential through shared problem solving and economic modelling

- 2 sites re-purposed
- 4 new consented sites
- 2.8MW (+ 5MW) installed
- 12 New designs
- 8 New Products (inc turbines)
- New networks - MEC; Supply Chain
- Training – Tidal, Low Carbon
- Cost reduction reports, data base, environmental data



Contact us

Email us: info@ore.catapult.org.uk

Visit us: ore.catapult.org.uk

Engage with us:



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