



Copernicus Marine Service – Informing ocean energy

Rémi Gruet, CEO, Ocean Energy Europe

Ocean Energy

5 Resources – 5 technologies – 5 opportunities



Ocean Energy
Europe



Tidal stream



Ocean Thermal Energy Conversion



Wave



Salinity gradient



Tidal range

Ocean Energy Europe



118 members - Lead Partners:





Ocean Energy
Europe



Tidal take-off in Northern Europe

- Scotland
- Wales
- French Channel
- Netherlands



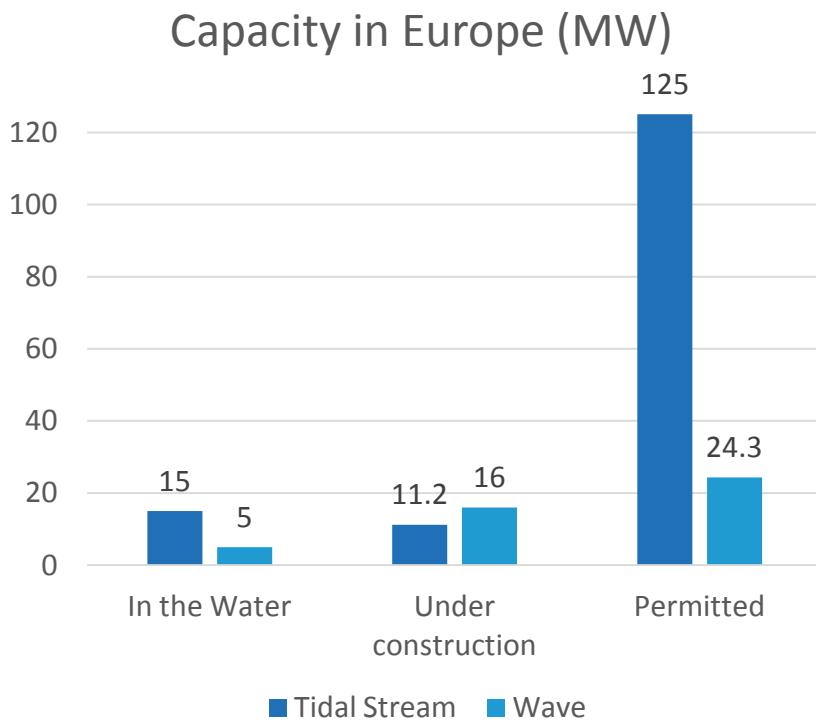
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Europe



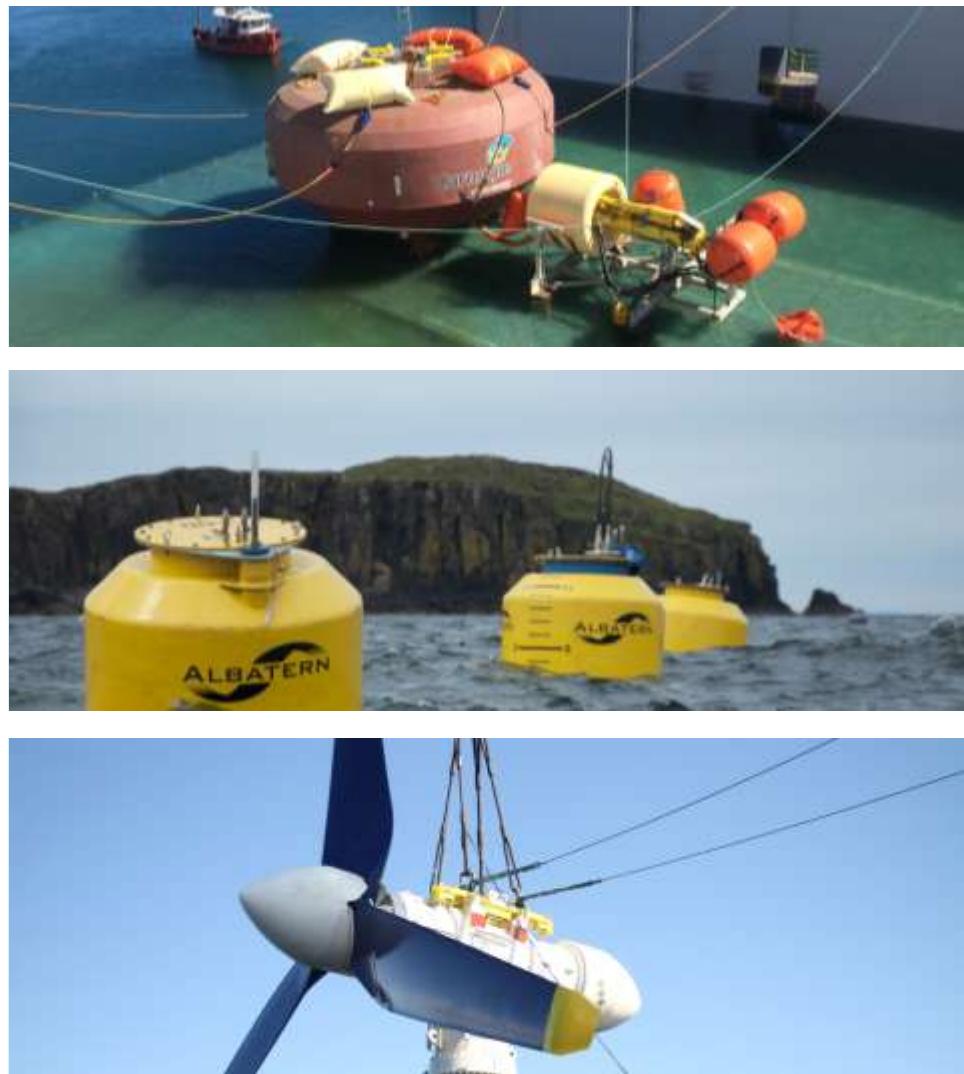
Early wave potential across Europe

- UK
- Ireland
- Portugal
- Spain
- Italian islands

2017 Ocean Energy is setting sail



**2050: 10% of EU
electricity, 400.000 jobs**



Setting sail, first Tidal farms connected



France

- DCNS/EDF at Paimpol-Bréhat, 1MW (2 x 0.5 MW)



Scotland

- Nova Innovation in Shetlands, 0.5 MW (5 x 0.1MW)
- MeyGen at Pentland Firth, 6 MW (4 x 1.5 MW), biggest tidal energy farm to date.



Setting sail, further MW-size tidal turbines



France

- Sabella 1 MW
(Ushant Island)



Scotland

- Scotrenewables 2MW
(Fall of Warness)



Netherlands

- Tocardo 1.25 MW
(Eastern Scheldt dam)



Setting sail, Wave technology progressing



United Kingdom

- Orkney: Wello, 1 MW



Portugal

- Peniche: AW-Energy, 0.35 MW



Italy

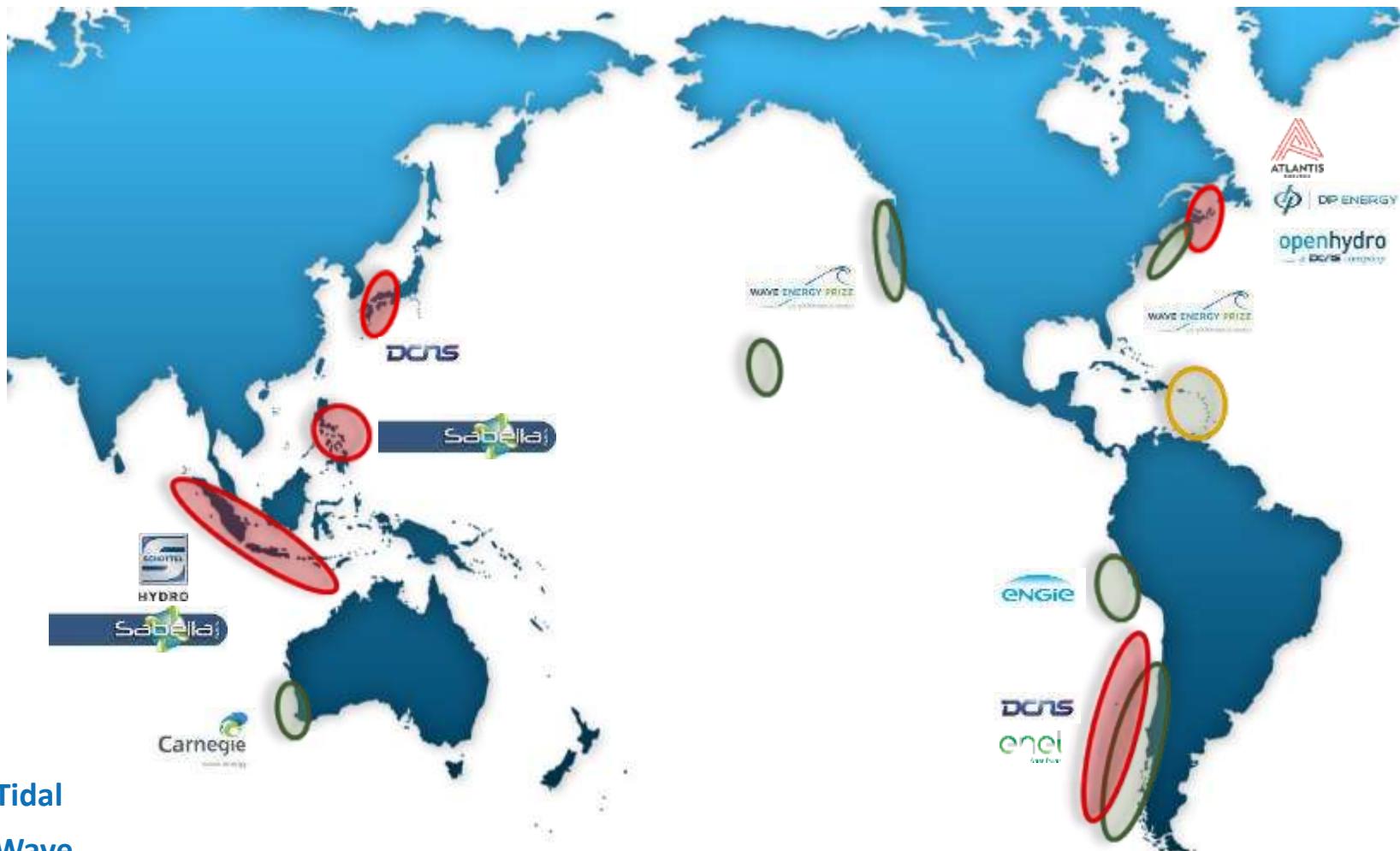
- Pantelleria: ENEL GP and Wave for Energy, 0.2 MW



European companies are already present on export markets

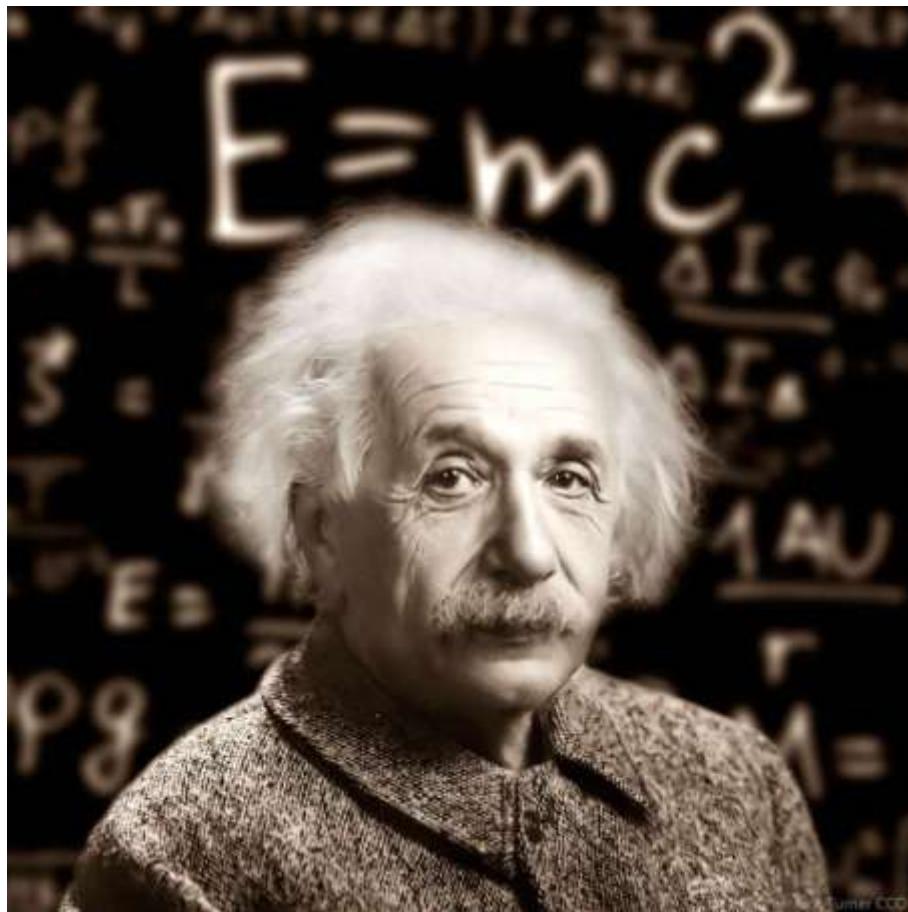


Ocean Energy
Europe



- Tidal
- Wave
- OTEC

Why we need Copernicus ...



**10% reduction in
current speed**

=

**19% reduction in
tidal farm revenue**

=>

Data precision is key!

Copernicus benefits

- Free – Innovation is expensive enough...
- Covering gaps in existing data
- Downloads for modelling
- Long Time / Real Time





**Tidal - Current mapping, speed, modelling,
environmental monitoring**

Wave Energy

Wave height & frequency, siting, operations



An aerial photograph of a coastal landscape. A multi-lane highway runs diagonally across the frame, bordered by green fields and a stone sea wall. In the background, a large bridge extends into the distance over a body of water. On the left, there is a cluster of industrial buildings, including several blue shipping containers, and a tall vertical structure, possibly a wind turbine or a measurement tower. The sky is clear and blue.

Salinity gradient – Resource evaluation, impacts of currents/waves

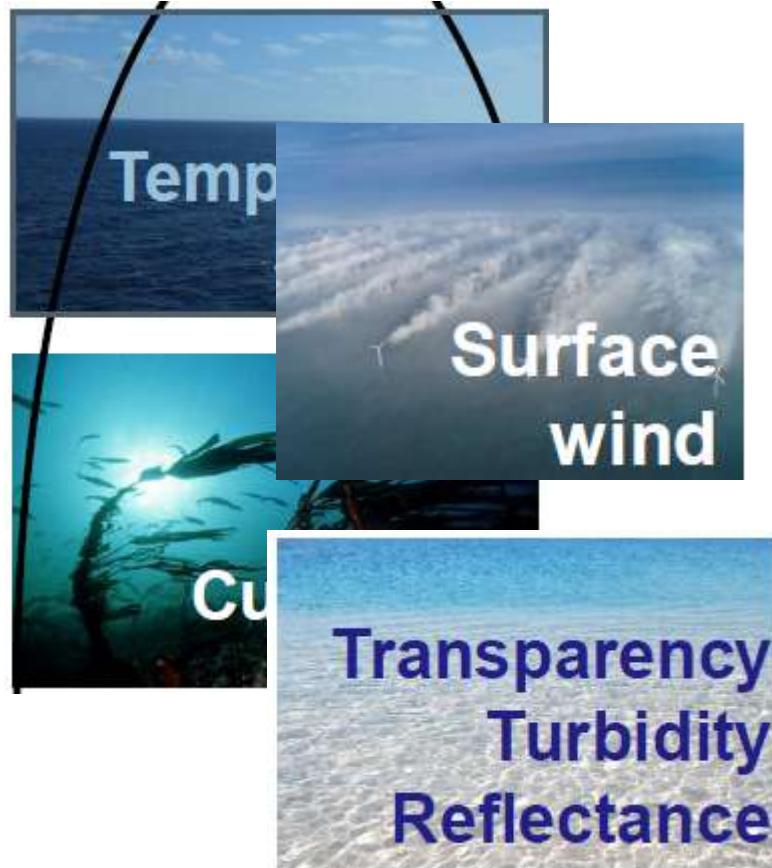


**OTEC - Sitting, temperature evaluation,
securing operations at sea**

NEMO project, Naval Energies, La Martinique (NER300)

©DC

More than resource assessment



- Weather forecasting
=> installation & maintenance
- Turbidity
 - => “Flying” rocks ?
- Surface wind
 - => surface waves



Future evolutions

- More granularity – mapping the resource with more data points
- Data closer to the coast to cover more potential sites
- Export markets
 - Low availability of information
 - Export investment already significant



 @euoea

www.oceanenergy-europe.eu



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Thank you