

Bring in the Dutch

The future of generating Marine Renewable Energy

Masterclass "Maritime Solutions for Offshore Renewable Energy"
5th of November - EUROPORT 2019 - Rotterdam Ahoy



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DMEC_NL



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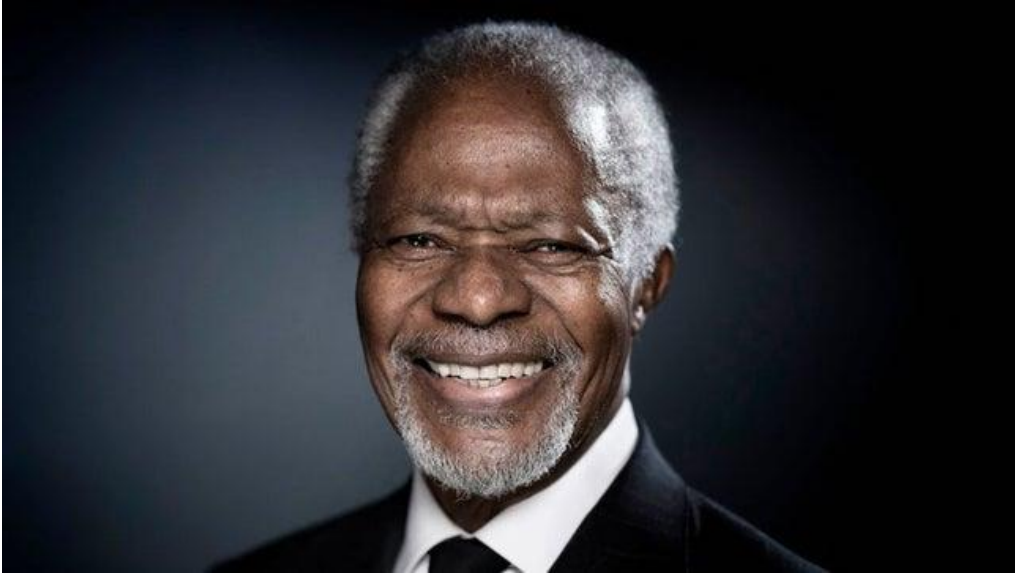


Dutch Marine Energy Centre



DMEC

Dutch Marine
Energy Centre



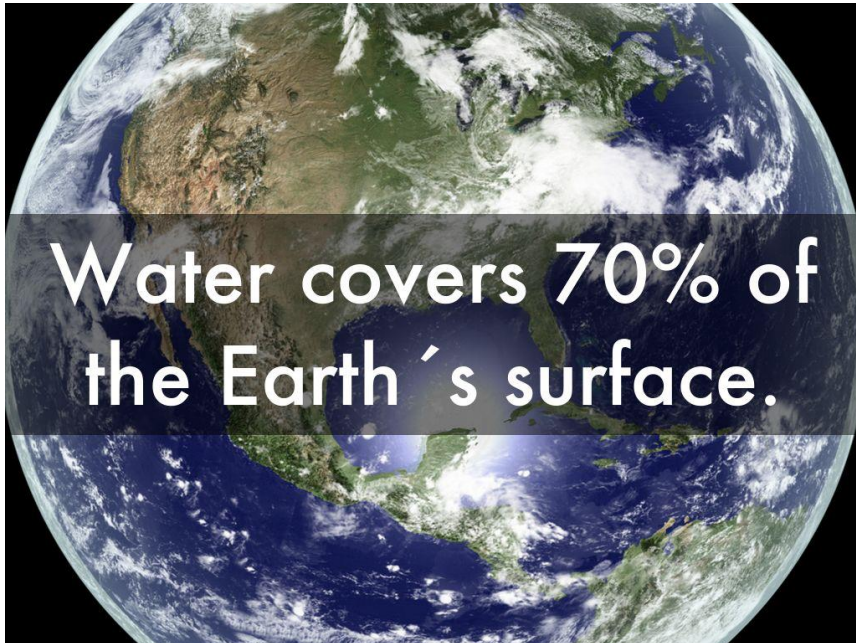
*"Shifting towards renewable energy sources is not only helping to **avert climate catastrophe**, but also creating **new opportunities for investment, growth and employment**. It is also the most promising way to provide **access to modern energy services** to the over 1.2 billion people worldwide who lack access to electricity."*

"Both governments and businesses have to accelerate the transition to low-carbon energy systems by investing in renewables, prioritizing energy efficient practices, and developing and deploying clean technologies."

Kofi Annan, Making Waves 2017

Marine energy – an important renewable resource

Largest renewable energy sources:
Sun, wind and water



Global potential of marine energy
by 2050

300 GW

Global annual energy production
± 350 million households

€100 BN

Annual global market

> 650.000 new jobs

In marine energy supply chain

Marine energy – multiple value propositions

- **Wide variety of technologies** => capture different forms of renewable marine energy
- **Balancing the grid** => Predictable, reliable, always available (complements wind and solar energy)
- **Efficient production** => High energy density per m²



Tidal Energy



Wave Energy



Salinity Gradient Energy

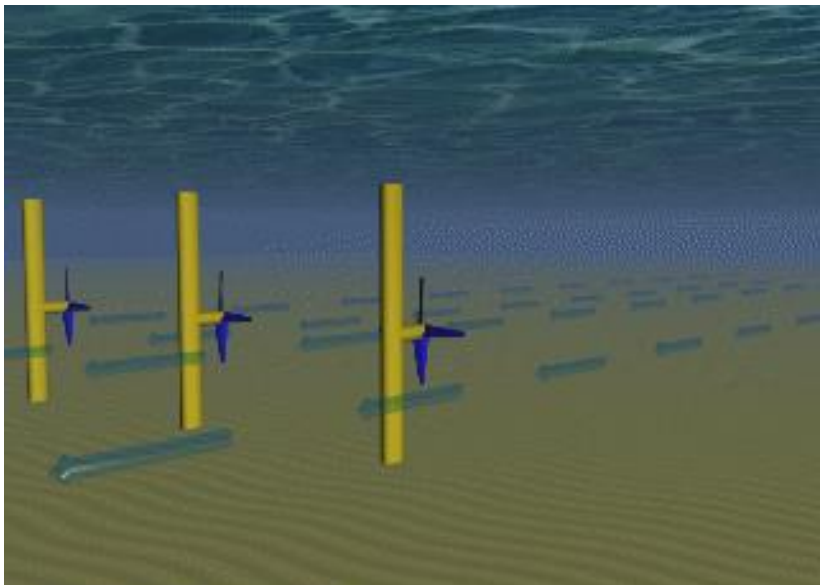


OTEC Energy

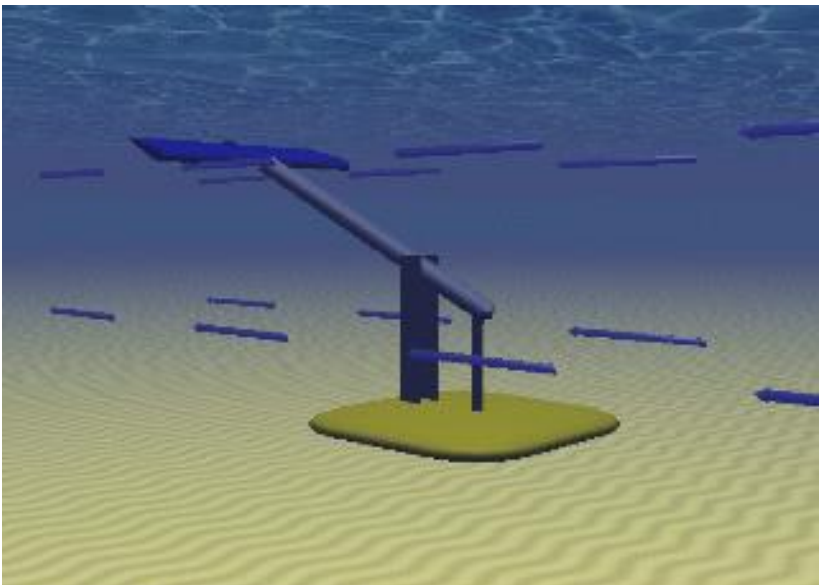
Multiple carbon free energy forms



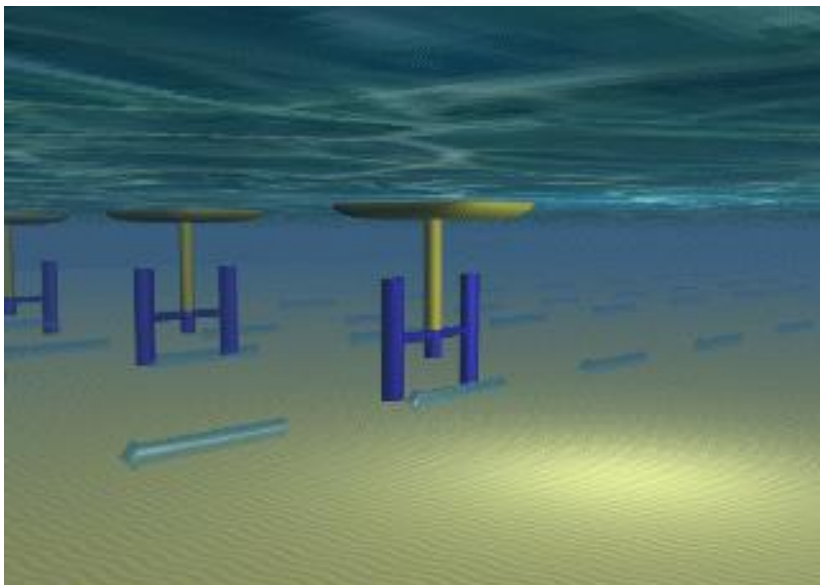
Tidal Energy



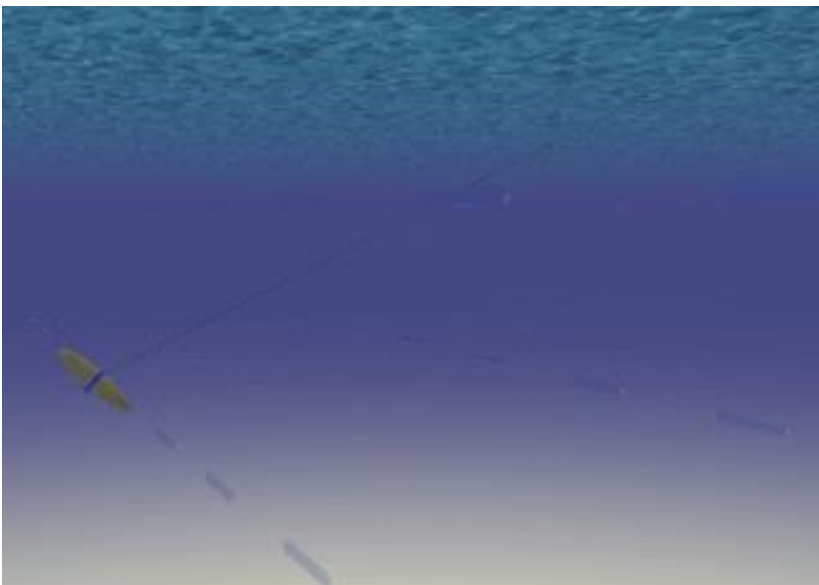
Horizontal Axis Turbine



Oscillating Hydrofoil



Vertical Axis Turbine

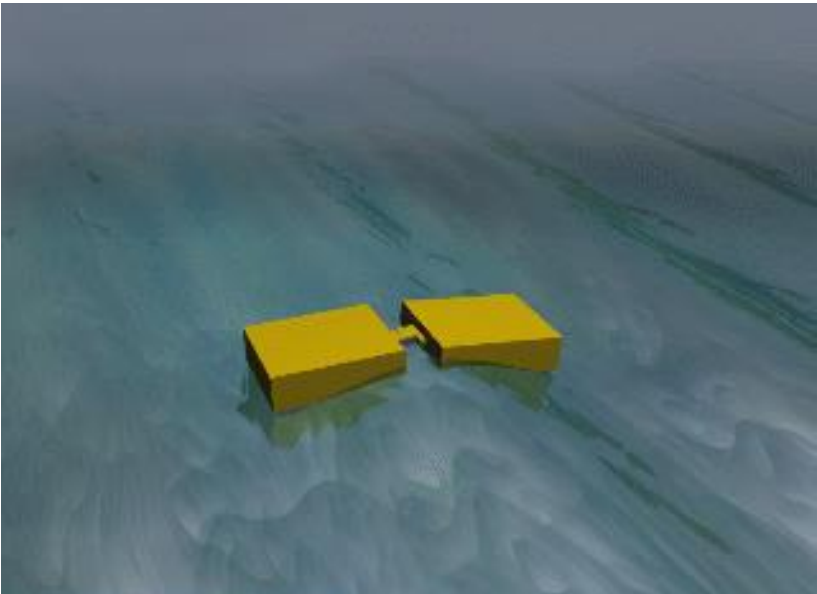


Tidal Kite

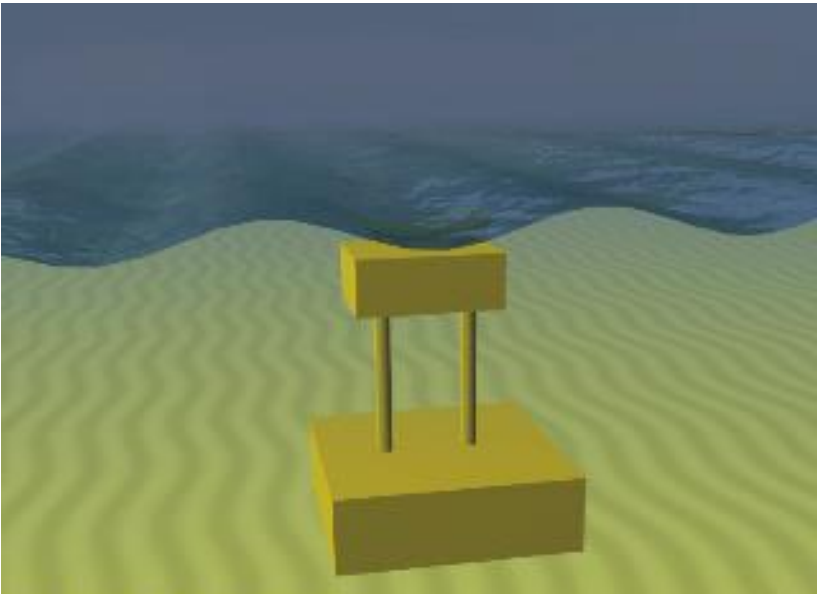




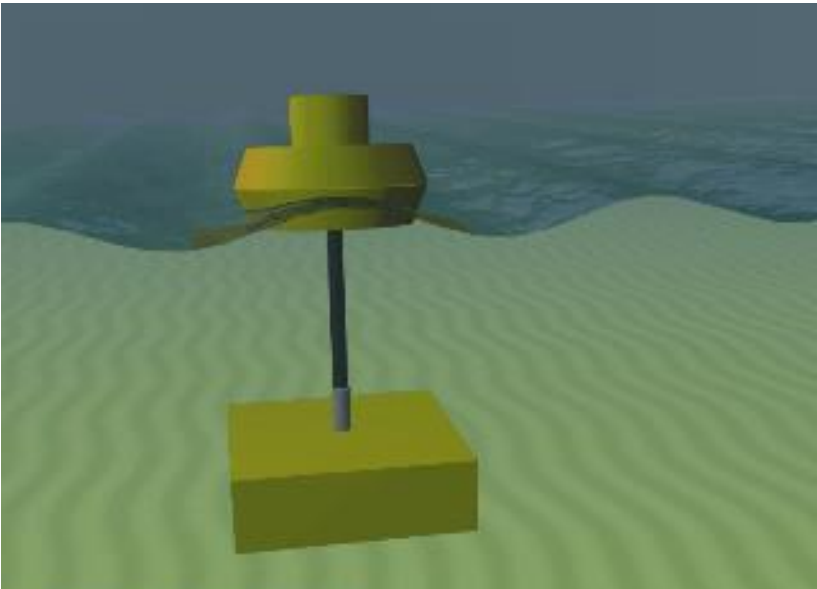
Wave Energy



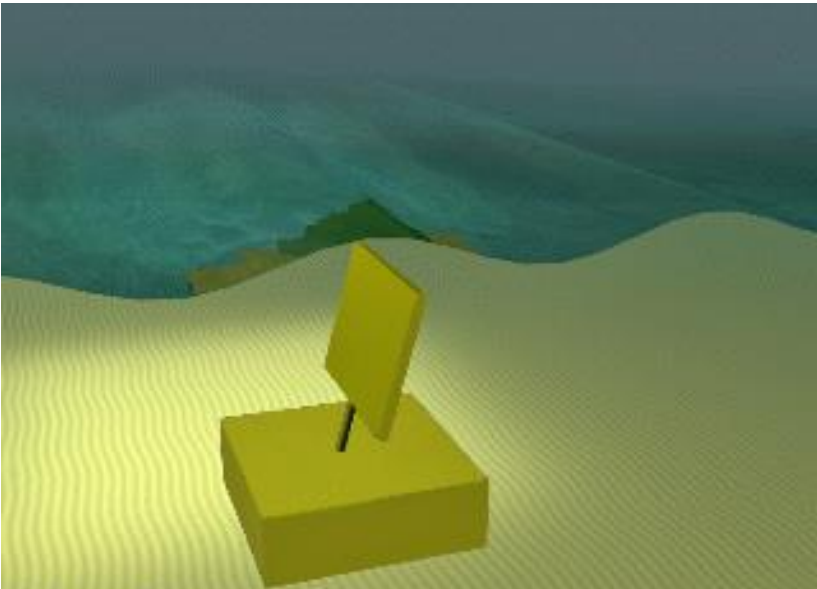
Wave Attenuator



Submerged Pressure Differential Devices



Surface Point Absorber



Oscillating Wave Surge Converter





Salinity Gradient Energy





OTEC Energy



Wide variety of universal solutions

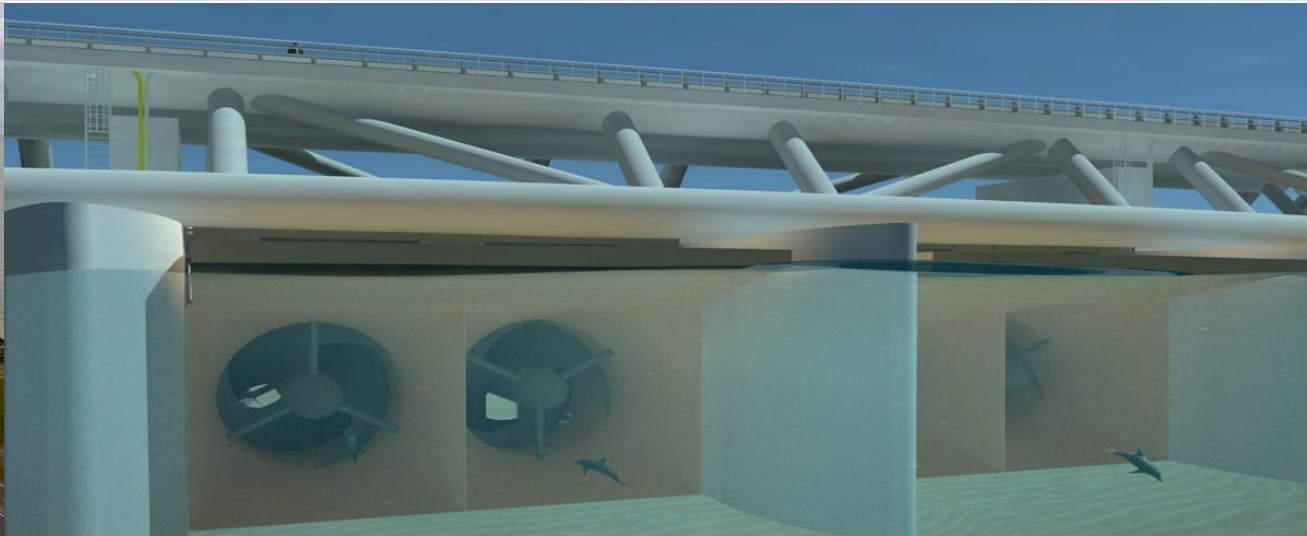
1. Governments aiming to increase the value of their infrastructures with energising barriers and bridges



Tidal array from Tocardo in EasternScheldt



Salinity gradient plant from REDstack in Afsluitdijk



Tidal Bridge Indonesia (Flores Timur)

2. Harbors and ports searching for sustainable solutions



**Tidal Solution (Water2Energy) in Port of Antwerp
(and soon in Port of Vlissingen)**

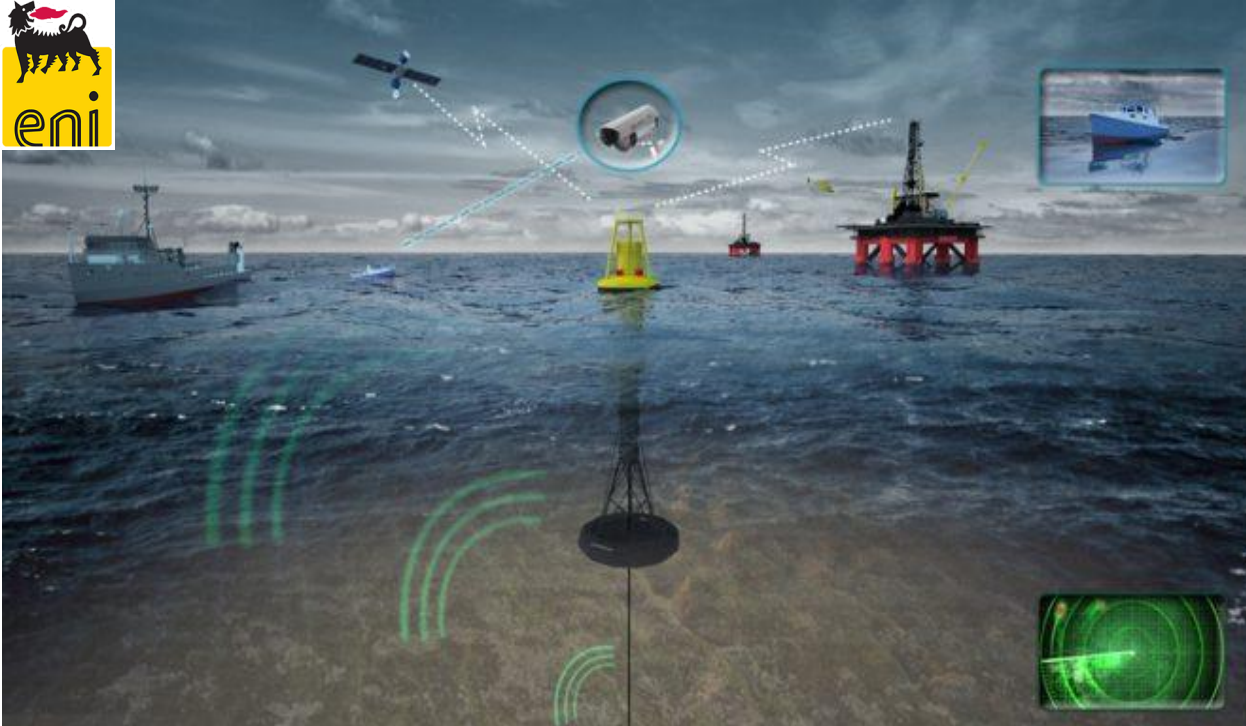


Wave energy solution (NEMOS) in Port of Ostend



**Feasibility of wave energy solution (EcoWavePower) at Port of
Amsterdam**

3. Oil & Gas aiming to sustain the operations of their operations

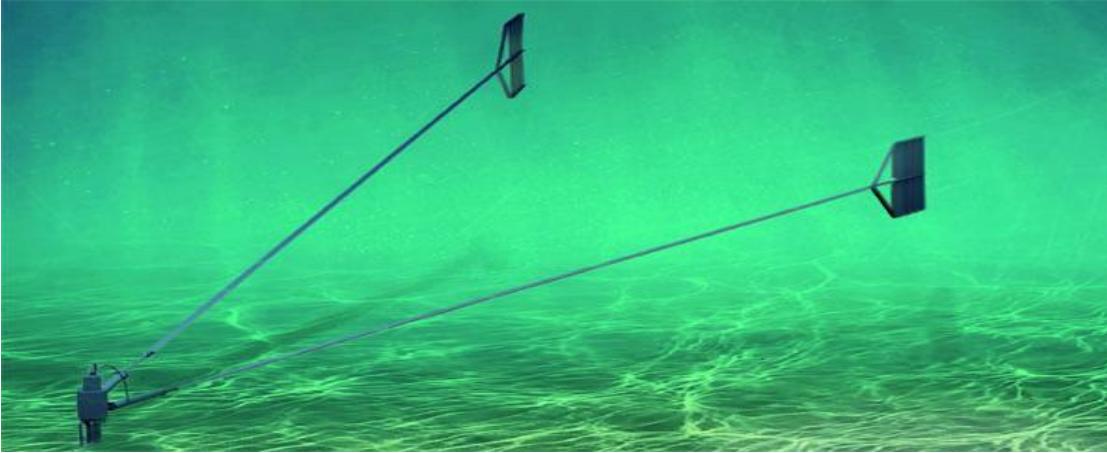


OPT Powerbuoy – Huntington field, safety zone during decommissioning



Johan Sverdrup will become one of the most carbon-efficient oil and gas fields in the world.

4. Remote communities aiming to become fossil fuel independent



Tidal kite (Seaquest) and wave energy (Slowmill) around Wadden Islands Netherlands



Development of OTEC plant (Allseas) in Bonaire



Tidal solution (Sabella) for the Phares Island France

5. Flood prevention and coastal protection



Bring in the Dutch

Profitable solutions can be delivered by world leading Dutch knowledge and offshore...

12 knowledge institutes & 22 test facilities

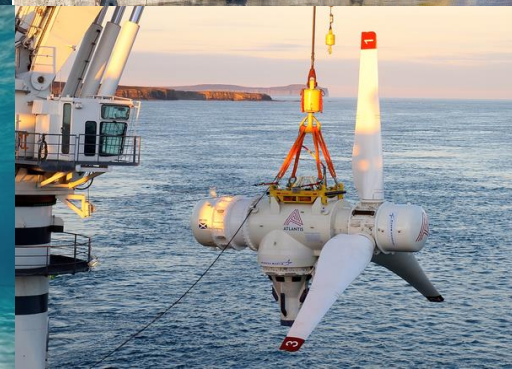
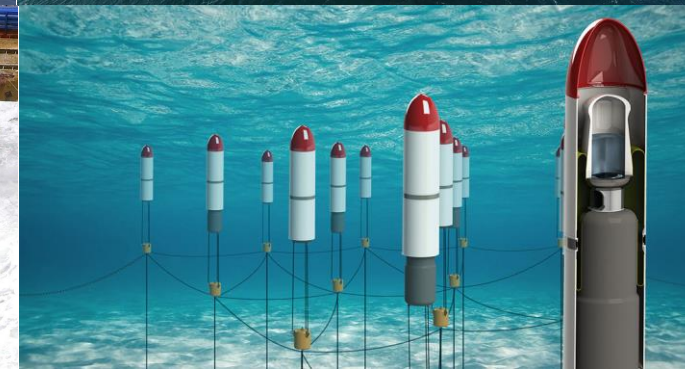


Strong offshore and maritime sector

- **Materials and equipment** suitable for offshore environment
- Vessels, services and products to **install, operate and maintain**



... together with >150 Dutch & international technology companies



DMEC - accelerating universal marine energy solutions

Our vision: marine energy as driver for carbon free energy supply globally

Our mission: Accelerate market uptake of marine energy solutions delivering renewable energy for specific market segments

Our strategy:

1. Coordinate **pan-European technology acceleration**
2. **Thought leadership** in innovative finance, public affairs, and standards & certification



Masterclass powered by the Ocean Power Innovation Network

OPIN - a European collaboration fostering cross sectoral business development. Want to know more and get free access to other events?

Join via: <https://www.nweurope.eu/projects/project-search/opin-ocean-power-innovation-network/#tab-2>

- Workshop: Advanced Materials and Manufacturing,
12 November, Nantes, France
- Masterclass: Installation and Mooring,
February 2020, Nantes, France

Marine Energy solutions complement world-leading capabilities of the Dutch Maritime and Offshore sector



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