Wave energy

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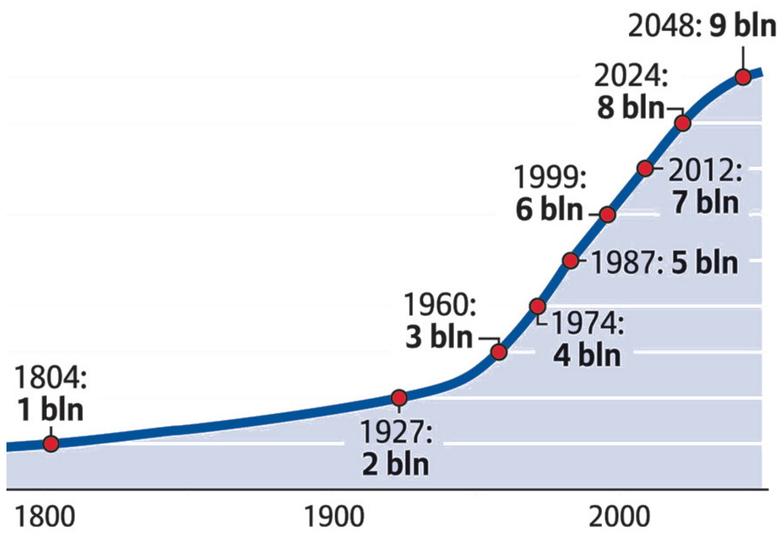
Energy demand

An exponential growth in world population, combined with a rapid diminishing of fossil fuel reserves and a growing awareness against polluting energy resources, has kickstarted the need for new clean energy sources. Next to wind, solar, hydro, geothermal and biomass, wave energy is a promising yet challenging option.

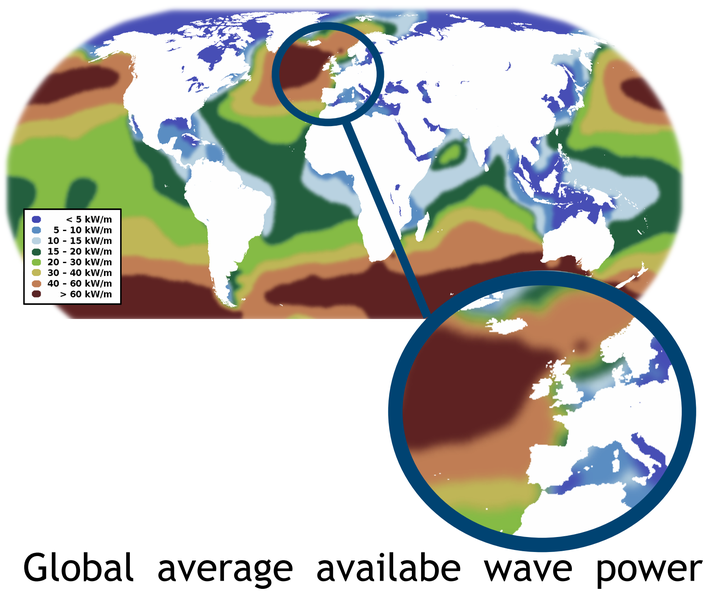


Population growth from 1800 and projection until 2050. Source: Allianz

Classic power plants relying on fossil fuels are highly polluting.

Potential

Europe has the largest wave power resource of the world. Although Belgium only has a mild sea climate, it is an ideal testing site. By combining multiple Wave Energy Converters (WECs) with existing/ new wind turbine farms, a significant contribution to the power supply can be made.

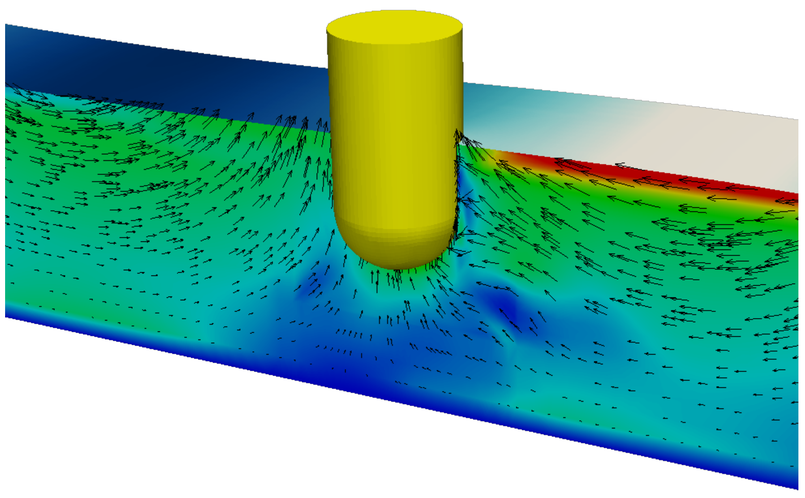


Global average availabe wave power in kW/m wave crest. Most power is located between 50°-70° latitude.

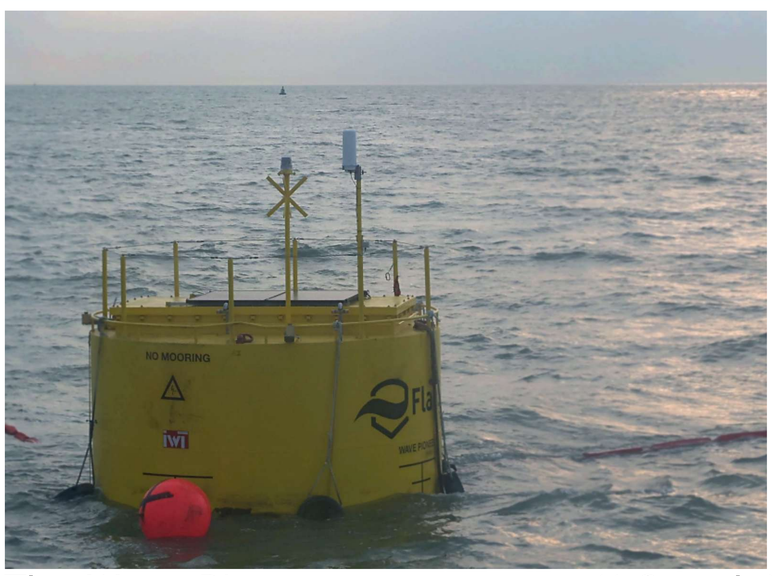
Artist impression of an offshore renewable energy farm: a combination of wind turbines with wave energy converters

Our research

At the Coastal Engineering Research Group, the wave energy problem is studied from several aspects. We have expertise and experience in numerical modelling, hydraulic modelling and field measurements of prototype wave energy converters.



Numerical modelling of a heaving point-absorber buoy using Computational Fluid Dynamics



The Wave Pioneer: a prototype (1:2 scale) model of a point-absorber WEC, as a part of the FlanSea project (2007-2010)

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