

PROMOTIONAL FEATURE

# Underwater kites lead new generation of tidal power

A revolutionary new technology to harvest the power of the sea is soon to go into service around UK coasts

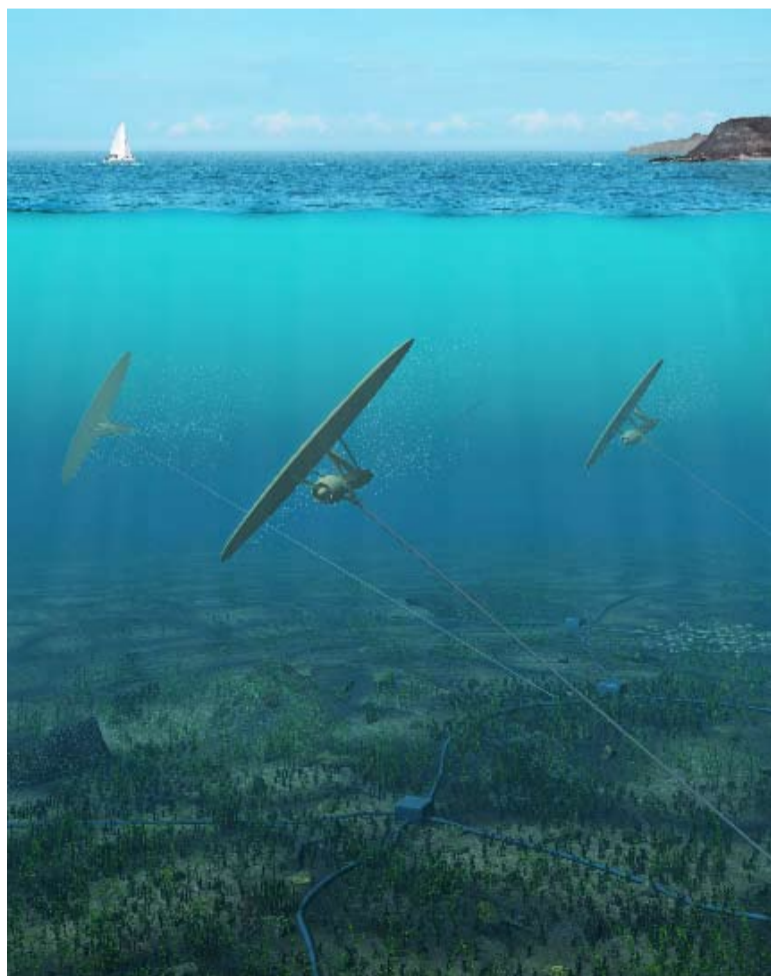
Flying kites might sound more of a seaside hobby than a serious way to plug the energy gap but a Swedish company has unveiled a way of using a form of underwater kite that can harness the power of the seas around Britain.

The system will generate an additional 18 terawatt hours (TWh) of power, roughly enough to provide 3.8 million households in the UK with green, reliable electricity each year, or the entire population of Surrey, Essex, and Kent combined.

Minesto, a spin-off from the Saab Group, has been working on a method of boosting the power of off-shore currents in the coastal waters around parts of the British Isles since 2006.

The power plant is called "Deep Green" and it produces power in an ingenious two stage process. The first stage increases the relative flow speed entering a turbine.

When the tide hits the wing of the "Deep Green" kites it creates a lift force and since the kites are attached to the ocean bed with a tether and controlled by a rudder, they can be controlled.



Kite power: the tide creates a lift increasing the flow of water into the turbines by 10 times

The method increases the flow velocity into the turbine with 10 times the current speed.

The second stage uses conventional plant to convert kinetic energy into electrical power. The net result is a small sized, efficient and cost effective device.

"Deep Green" has been taken up by The Carbon Trust, the independent company, set up by the UK Government in 2001 in a bid to accelerate the move to a low carbon economy.

The system is particularly suited to areas of relatively deep water that experience low velocity currents.

"The Irish Sea is a prime target for our technology because suitable currents can be found in water close to shore, this enables the costs reductions of cabling and installation," explains Anders Jansson, managing director of Minesto.

Deep Green nearly doubles the potential power production from tides in the UK from 22 to 40 TWh per year, claims Minesto. It broadens the choice of sites to include those with

water flows between 1.2 and 2.2 metres per second and depths between 60-120 meters.

The technology has been evaluated and taken up in the Marine Energy Accelerator (MEA) program by The Carbon Trust in a bid to accelerate the move to a low carbon economy.

"Cost is the key issue currently preventing marine from being competitive with other energy generation sources and the MEA aims to reduce cost," said Tom Delay, chief executive of the Carbon Trust.

The Minesto device is a key component in the Carbon Trust's strategy to develop novel devices that represent the next generation of marine renewable energy, he added.

The power plant weighs only 13-14 tons/MW and electricity generation costs using Deep Green are in the range of 0.06 to 0.14 Euros per KWh.

"This generation of device can deliver high efficiency at low cost", says Mr. Jansson.



# Minesto

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