

# Deep Green underwater kite to generate electricity (w/ Video)

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The Deep Green technology converts energy from tidal stream flows into electricity by way of a novel principle, somewhat similar to the posture of a wind kite. Image credit: Minesto

(PhysOrg.com) -- An underwater tidal turbine called an “underwater kite” has just secured finance from investors to ensure its 2011 tests can go ahead.

The turbine, known as “Deep Green” was developed by a privately-owned Swedish/UK company, [Minesto](#), and is intended to be tethered 100 meters above the sea bottom. It has a wingspan of 12 meters and a turbine one meter in diameter. The “kite” comprises a wing with a rudder to steer the turbine to face in the direction that will allow it to

capture the maximum amount of tidal energy, and generate up to 500 kW of electricity. The kite flies in a figure eight and travels 10 times faster than the water it is tethered in.

Ted Rosendahl, chief technical officer with Minesto, said the design will enable Deep Green to operate efficiently at greater depths and with lower current velocities than other tidal energy generators, which opens up new areas of the sea for tidal power generation, increasing the market potential by 80 percent, according to Minesto. Deep Green's unique ability to work in deep water where there is low velocity water movement means it can operate cost effectively in areas otherwise unavailable for power generation.

There are two major types of tidal energy generator installations at present: one is the tidal barrage, which works in a similar way to a [hydroelectric power station](#), and the other uses the flow of the tide and works in a similar way to wind power installations. In comparison with other tidal systems Deep Green is lightweight and much smaller, which translates to lower manufacturing costs.

The company will receive two million Euros (around 2.5 m USD) in investment funding, which will enable it to test a 1:4 scale prototype off the coast of Northern Ireland in 2011. The test site, at Strangford Lough, County Down is the location of a tidal generator owned by the UK company SeaGen. If the Deep Green trials are successful, the next step will be to test a full-scale demonstration plant consisting of up to 10 kites. Financing needed for this stage is expected to be around 40 million Euros.

Rosendahl said the company hopes a full-scale Deep Green generator will be commercially available within the next four years, adding to the available options for renewable energy sources. Tidal energy generation is usually more expensive than wind or solar power, but the predictability

of the tides compensates for the extra initial cost, because unlike solar and wind energy, the tides operate every day of the year. Minesto says its Deep Green project is expected to be “very competitive in comparison with traditional electricity production.”

Minesto was formed in 2007 for the purpose of developing tidal power generators. Deep Green began as a Saab Group project in 2003, and Minesto was formed as a spin-off company.

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