

## Novel Moored Tidal Stream Generating Equipment

### OBJECTIVES

- To conduct an environmental impact assessment of the TidEl tidal stream generator
- To design, assemble and install a full-scale 1MW rated TidEl equipment
- To operate the equipment for up to 12 months including a winter period
- To develop and evaluate installation, maintenance and decommissioning techniques
- To prove the economic viability of TidEl.

### SUMMARY

Tidal energy is a largely untapped natural renewable energy resource and approximately 92% of available UK tidal energy resource exists in deep water.

SMD Hydrovision (SMDH) is a company with over 30 years experience designing subsea machinery and has developed the TidEl concept to exploit this resource.

TidEl consists of a pair of turbine/generators that are fixed together by a cross beam and secured to the seabed using a novel mooring system.

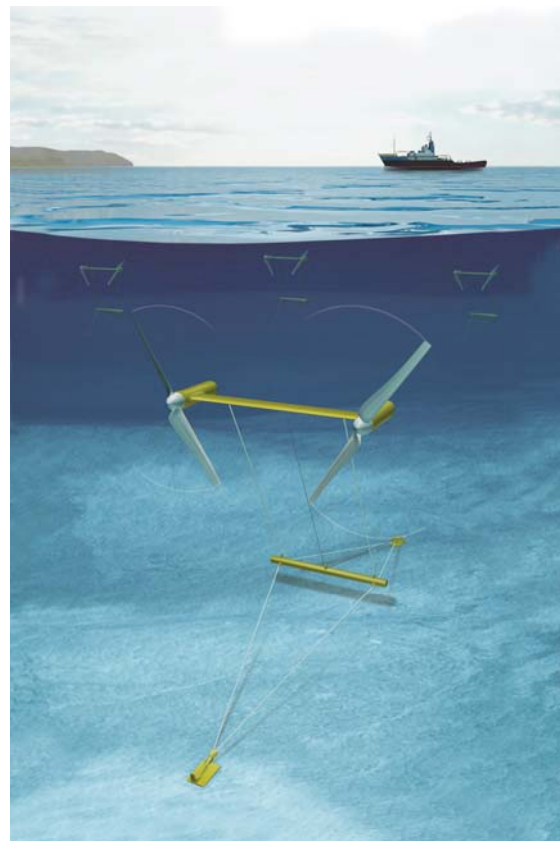


Figure 1. A TidEl generating device (courtesy of SMD Hydrovision)

This arrangement has the following advantages:

- Automatically aligns itself with the tidal flow
- Suited to deep water
- No visual impact as it is installed subsea
- Integral maintenance access system
- Comprises of proven scaleable technology

- Low cost and low installation cost.

The TidEl generators use variable speed drives which allows the generators and hence turbines to operate at varying speeds. This has the following advantages:

- Optimal hydrodynamic efficiency can be achieved for any given tidal current velocity
- Fixed pitch rotor blades are used thereby greatly reducing complexity of the system and cost
- High quality, stable ac power is delivered at the correct frequency to the grid
- Generates electricity at prices comparable to wind power.

SMDH have already designed and tested a 1/10<sup>th</sup> scale model of its TidEl novel moored tidal stream generating device that:

- Demonstrated the practical and economic viability of TidEl as a deep water tidal energy gathering device
- Proved the intrinsic stability of the mooring system
- Proved the electrical drive and grid connection concepts.

It is planned in this project to install a 1MW TidEl device at the EMEC facility off Eday in the Orkney Isles in 2006, where it will be subject to extensive testing over a prolonged period.

## **CONTRACTOR**

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## **COST**

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The total cost of this project is £4,486,000 with the Department of Trade and Industry (DTI) contributing £2,678,000, and SMDH the balance.

## **DURATION**

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35 months – April 2005 to February 2008.

For further information about renewable energy please visit the DTI website at [www.dti.gov.uk/renewables](http://www.dti.gov.uk/renewables).

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