

# MARINE POWER COST-OF-ENERGY ANALYSIS

## LEAD ORGANISATION

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## COST AND DURATION

The Carbon Trust contribution towards this project is £149,978. The project started in June 2006 and is due for completion in February 2007.

## PROJECT REFERENCE NUMBER

2005-7-3390

## OBJECTIVES

The purpose of this project is to undertake the necessary 1/7th scale testing, resource studies and financial analysis to prove the device concept and allow an accurate cost-of-energy estimate to be made for the Scotrenewables floating tidal stream turbine system (SRTT).

## SUMMARY

Scotrenewables plans to carry out design modifications to the existing 1/7th scale model to improve performance and simplify testing procedures. These will include:

- Blade redesign
- Hub modification
- Rotor-arm jacking mechanism modification to test survivability during periods of inclement water
- Geometry optimisation
- Electrical control system design

Tank and open-sea trials will be carried out to establish the performance parameters of the system over a full range of operating conditions.

The second part of the project will include a preliminary full-scale design of the model using an advanced numerical and comprehensive computational fluid dynamics (CFD) model. These will assist with the performance predictions and



SRTT Tidal Turbine Concept

analysis of full-scale fluid flow patterns and structural loading. An engineering design will also help develop an initial costing for the materials required and will result in a design report with engineering, electrical and instrumentation diagrams.

The final part of the project will be a cost-of-energy analysis. This will involve investigating construction costs through discussions with engineering fabrication companies and generator manufacturers. Industry partners will assist with estimating the installation and operational costs.

The final deliverable will be a report detailing the predicted cost of energy for the SRTT system. The report will form the basis on which a decision will be made to produce a full-scale demonstration phase of the overall project, leading to a full-scale prototype being tested by autumn 2007.