

WAVEBOB TANK TESTS

LEAD ORGANISATION

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COST AND DURATION

The Carbon Trust
contribution towards this
project is £51,873. The
project started in March 2006
and is due for completion in
October 2006.

PROJECT REFERENCE NUMBER

2005-3-2855

OBJECTIVES

Clearpower Technology Ltd is developing the 'Wavebob', a device that generates electricity from waves.

The objectives of this project are to:

- Specify a detailed tank-test programme, including test conditions and measurements required to satisfy outstanding detailed design issues.
- Design and construct a suitable scale model.
- Complete the specified model tests. The tests hope to prove that the loading conditions employed in the Wavebob's design are adequate for the operational and extreme environmental conditions that are likely to be encountered at prospective offshore sites for wave-farm developments.
- Collate, analyse and report the results of the model tests.
- Confirm a feasible Wavebob design for the onward development programme.

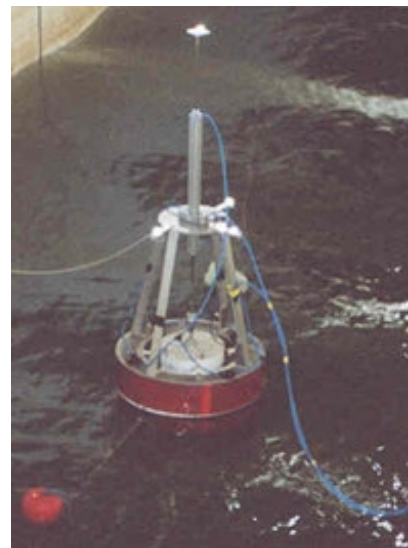
SUMMARY

To date, Wavebob development work has resulted in promising performance indicators that have been scrutinised and verified through involvement with the Marine Energy Challenge.

Like most offshore floating structures, Wavebob is considered dynamically complex. Therefore, a commercial-scale prototype requires structural verification. A key element of this process is analysing the behaviour of the device through model testing to confirm the dynamics in peak generating conditions and survivability in extreme conditions.

The work will be carried out in four tasks.

Task 1. A structural Wavebob configuration will be assessed by a specialist offshore engineering consultancy. When the final configuration has been selected, and the stress points and potential collision points identified, the consultancy will be



A Wavebob prototype during a previous tank test

contracted to identify the measurements that should be made to allow a full structural verification of the device to be made. This will result in the definition of a test matrix identifying the specific tests and the sea-state conditions that should be simulated.

Task 2. A suitable model will be designed and built according to the Wavebob configuration defined in Task 1.

Task 3. During this task, a suitable tank-testing facility will be identified, the test rig built and tests carried out. Measurements taken during this Task will include: forces on the power take off system and frame structure; mooring loads; occurrences and magnitude of contact forces; and forces on the main structure that require direct measurement to verify the load cases for the structural verification process.

Task 4. The results from the tank tests will be analysed in the context of the structural issues raised in Task 1. The associated report will also highlight any additional areas of work that may need to be carried out to allow a full structural verification of the device to be undertaken.