CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY

Name(s)
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Project Number
J0912

Project Title
Hydroelectric Generators: Oscillating Water Column vs. Tapered Water Channel

Abstract

Objectives/Goals
The objective was to determine which hydroelectric generator produces the highest electrical output, the Oscillating Water Column or the Tapered Water Channel. My hypothesis was that the Oscillating Water Column generator would produce a higher electrical output than the Tapered Water Channel.

Methods/Materials
Models of the Oscillating Water Column and Tapered Water Channel generators were constructed out of household and easily obtainable materials. Both generators were fitted with the same size turbines and generators. The generators were tested in five trials each, simulating ocean wave action with the same amount of wave volume and frequency.

Results
The peak electrical output of the Oscillating Water Column generator was higher than the Tapered Water Channel generator in all five trials.

Conclusions/Discussion
My conclusion is that the Oscillating Water Column generator consistently produces a higher electrical output than the Tapered Water Channel generator in ocean wave conditions of the same volume and frequency.

Summary Statement
My project compares the electrical outputs of Oscillating Water Column and Tapered Water Channel hydroelectric generators.

Help Received
My mother helped get the correct materials and read the electrical outputs while I simulated the wave motion for each generator. Parents and teachers proofread my report.