Catch the Wave

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Seventy-one percent of our world is made up of water, with five oceans, 117 million lakes, millions of miles of rivers, and so much more. Capturing all of this nonstop water movement happening across our planet would allow us to produce exponential amounts of clean energy to power anything and everything imaginable. Therefore, three energy capturing devices were tested to see which one would harness the most clean energy from wave motion. The hypothesis stated that the Sea Snake mechanism would yield the highest energy output levels. The three devices were assembled, with the Bobber and Sea Snake devices using a magnetic coil mechanism, while the Oscillating Water Chamber relied on a piezoelectric transducer to convert movement into energy output. Consistent waves were then produced for each individual device trial, within a 50 gallon aquarium. Over 150 data sets measured in micro amperes, were collected throughout 15 trials, and then averaged to obtain an average total energy output level for each device. The final analysis revealed that the Sea Snake mechanism, on average, produced the most energy, at 123 micro amperes. The Bobber mechanism followed, and then the Oscillating Water Chamber, which yielded the least energy production, at only 7.4 micro amperes. In conclusion, the Sea Snake mechanism harnessed the highest amount of energy output, thus supporting my hypothesis. If this experiment was repeated, I would test a broader range of energy capturing mechanisms, with varying wave heights, and wave-speeds. Through this experiment, I have not only learned about how to convert movement into measurable energy, but also about the endless uses of wave energy across the globe.

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