Underwater Turbine Innovations

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Global warming and the increasing amount of pollutants in our oceans, rivers, and land have been slowly increasing throughout the years. Many of these environmental problems our earth is facing are due to our society's reliance on fossil fuels. While many are already looking at alternative sources of energy, underwater turbines are not one that is often talked about. This is especially true when it comes to research about the blades that provide life to these machines. In this study, I'll investigate the efficiencies of different animal-based designs which are often overlooked by many researchers. These designs are based on the Humpback whale, Leatherback sea turtle, Gentoo penguin, and control that will have a standard airfoil shape. However, this experiment, in particular, will involve the testing of these designs on a functioning underwater turbine that will output the voltage produced by each design over the course of three trials. This experiment found that the Leatherback sea turtle design performed the best over the course of the 3 trials with the control performing second best and the humpback design just slightly behind. The Gentoo penguin was found to perform the worst out of the three. These results suggest that the unique paddle shape of the Leatherback's fin gives it a simple yet unique advantage over the other three designs by having a larger area to catch the water flowing bye. With further research into the leatherback and other possible animals, the efficiency of underwater turbines could substantially increase.

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