The Development of a Stream Generator Prototype Capable of Obtaining Tidal Energy From Diverse Bodies of Water

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The cost of the electrical energy from the grid of Puerto Rico is 30% more expensive than the average cost of energy in the United States. The high cost of energy has caused an economic burden to Puerto Ricans. The state government has operated obsolete systems for more than 50 years, are very costly and hard to maintain. Tidal energy is a renewable energy produced by making use of water currents in bodies of water. It is one of six types of renewable energies. With this research, tidal renewable energy and the challenges that must be addressed for widespread adoption were examined as a potential source of renewable energy. The prototype was able to generate a constant stream of electricity by employing a paddlewheel turbine that is used to move a gear transmission, which in turn, moves two electric generators that power a small light bulb. The electricity generated was measured by a voltmeter in the circuit board. The prototype was tested in Sardinera Beach, in Hatillo, Puerto Rico, which had a constant flow of water. The tests recorded an average voltage of 1.55 volts; a maximum voltage of 4.9 volts was recorded and a minimum voltage 0.6 volts was recorded. The test results demonstrated that it is possible to obtain a constant flow of electricity from tidal renewable energy. The prototype also proved that tidal renewable energy could be used in the future to supply the population with a reliable source of electricity.

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