Programmable System for the Extraction of Hydroelectric Energy

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This investigation develops an innovative solution to solving a community's energy deficiencies through the use of its renewable resources. The hypothesis states that those deficiencies will be solved by creating a hydroelectric energy capture concept that will produce energy in an efficient and cost effective manner complemented by a programmed monitoring and data analysis system. A combination of new technologies is implemented, including an adaptation of the Zotlöterer model, integrated energy storage, and geometric figures (conical frustum shape) designed to extract the most energy possible. Water enters the upper area, moving turbines and spinning an axis, creating electric charges through the rotor and stator. The program created modifies the system's functions depending on the necessities of the population and environmental factors (temperature/density/water salinity) to achieve the longest product life with efficient energy capture. Additionally, the coded programming component created in a mathematics programming language studies the community's energy use tendencies to automatically adjust system components for productive generation of energy. The data obtained is presented in graphs that show energy in terms of system level (how hard the system will work). Higher efficiency is present between levels 60 and 80, while if the system reaches anything higher than that, energy capture and effectiveness will decrease since the system will work harder than it physically can, causing exhaustion. Upon finalizing the investigation, the hypothesis was proven since a programmed hydroelectric energy capture system was created that could potentially solve energy deficiencies in an efficient, adaptable and cost effective manner.

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