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Hydrobreeze

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ABSTRACT

Hydrobreeze is an eco-friendly fan which uses renewable energy. The main idea of inventing the Hydrobreeze fan is to save the earth from non-renewable energy and reduce cost in electricity. This is due to news concerning global warming in our country because of non-renewable energy usage and complaints about rising electricity bills because of its high usage in life. Therefore, the Hydrobreeze fan is introduced, which uses water as renewable energy to generate electricity. The usage of hydroelectric energy in this invention is hoped to contribute to the well-being of this planet and give benefits to individuals. This Hydrobreeze fan will be an attention grabber for everyone to buy and benefit from its functions. In conclusion, Hydrobreeze fans will be useful to protect our drowning earth and cut the electric bills.

Keywords: hydrobreeze fan; renewable energy; hydroelectric energy; generate electricity.

1. INTRODUCTION

In a world where environmental consciousness is becoming increasingly crucial, our daily choices have a profound impact on the planet. Traditional appliances, while providing comfort and convenience, often contribute to energy consumption and carbon emissions. That is where our Hydrobreeze fan steps into a refreshing breeze powered by the force of sustainability (Handheld Fans Market Size, Share, 2024). Imagine a fan that not only cools your surroundings but also cools the planet. By harnessing the power of renewable sources, which is water, this fan becomes a beacon of eco-friendliness. It taps into the abundance of renewable energy, minimizing your carbon footprint and making a tangible difference in the fight against climate change (Hydroelectric Energy - How Hydroelectricity Works, 2024). As we navigate the challenges of a changing climate, it's evident that we need innovative solutions to continue enjoying modern comforts without compromising the future of our planet. This fan isn't just a product; it's a commitment to a greener, more sustainable lifestyle. It's a breath of fresh air, both literally and figuratively, as it ushers in a new era of responsible and conscious living.

In the summer, many people incur high electricity bills, primarily due to their frequent use of air conditioners. Plus, most of our country's electricity comes from nonrenewable sources, causing pollution and global warming. So, our group is jazzing up the fan with special features. The goal is to make the Hydrobreeze not just cool for customers, but cool for the country by saving energy and being more environmentally friendly. In summary, our decision to enhance the fan was motivated by high summer electricity bills and environmental concerns. Our Hydrobreeze aims to cut costs for users and contribute to a greener, cooler country with its energy-efficient feature.

Our project is fundamentally driven by a dual purpose: first and foremost, to champion environmental conservation by harnessing the potential of renewable energy sources, and secondly, to provide users with a practical means of economising on their electricity expenses. In essence, we're on a mission to contribute to the well-being of the planet while also offering a tangible benefit to individuals through cost savings on their energy bills.

Many people face substantial electricity bills in the summer due to frequent air conditioner use, exacerbated by the fact that much of our country's power is derived from nonrenewable sources, contributing to pollution and global warming. That was what made us decide to come up with our Hydrobreeze project.

2. METHODOLOGY

Based on observation and research, hydroelectric energy is applied in this product using the physics concept of induction. Electricity is converted from the kinetic energy of the water using a hydro turbine generator. This energy is called hydroelectric energy. By the material that we have, the body and base of the fan is made of Acrylonitrile Butadiene Styrene (ABS) plate that is a thermoplastic polymer. We chose to use this type of polymer as this due to its high resistance of chemicals, easily recyclable and light.

Moreover, we use water flow pumps to generate hydroelectric energy. The water will flow inside it making the turbine spin causing the relative movements in the electromagnetic field (Induction Generators, 2024). This action will cause the generator to generate the current for the fan propeller to move (Serway, R. A., & Vuille, C., 2017). This pump also has mechanical noise less than 55dB, SO there would be less noise when using this product. This pump also has a life span >3000h, thus, it can be used for a long time (Working Principle of Electric Generator, 2016). Lastly, the water tube will be connected to the water tank to continuously supplying water for the generator to keep generating hydroelectric energy.

3. RESULTS AND DISCUSSION

Hydroelectric energy is a renewable energy source which harnesses the power of moving water to produce electricity. In Hydrobreeze, the water potential energy from the water reservoir inside the water tank is converted into mechanical energy. As the water flows, its kinetic energy is used to turn the water flow pump or a hydro turbine generator. It is a model 12 V voltage regulator output that can give the 12 V radio power, charge and power supply with the max current $\geq 220\text{mA}$ and max output voltage 80V. This water flow pump acts as a generator in our Hydrobreeze which functions to generate electricity by converting kinetic energy into electricity.

Apart from that, in Hydrobreeze, the water will flow from the water tank which is designed to be located above so that it is said the head of the water reservoir is high. This is due to the higher the tank, the greater the water flow, more electricity can be generated. Thus, in this product, we have to carefully design the location of the water tank so that the water cycle is efficient to do the work.

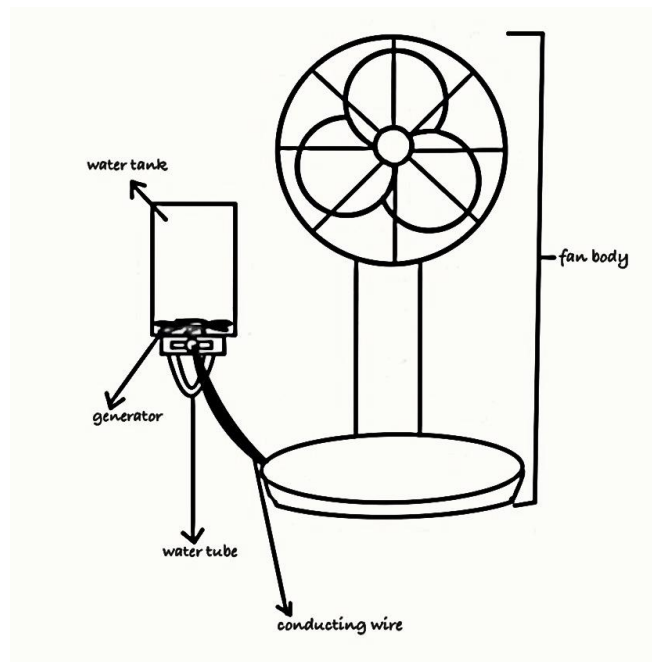


Figure 1. Innovation Prototype

Moving a magnet in front of a conductor results in the flow of electricity. Electromagnets in generators are created by passing direct current through wire loops wound around magnetic steel lamination stacks. These are installed around the rotor's periphery and go by the name of field poles. A set speed is rotated by the rotor, which is fixed to the turbine shaft. The field poles, or electromagnets, move past the conductors installed in the stator as the rotor rotates. As a result, power starts to flow and a voltage starts to build at the generator's output terminals. Therefore, the electromagnetic induction in the electric generator that transforms the mechanical energy of a rotating turbine into electric energy and lastly, spin the propeller fan in our hydrobreeze product.

4. CONCLUSION

To sum up, hydrobreeze can reduce electricity costs while simultaneously protecting the environment through the use of renewable energy. Other than that, our product has portable and adjustable fan speed that can ease users. We also have a variety of colours to attract people to buy this innovative product.

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