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Effortless Ablution Turbine

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ABSTRACT

Effortless Ablution Turbine is a smart innovation that aims to obtain electricity through the utilization of waste ablution water or rainwater. Created with aftermarket components, these devices consist of dynamo-like electronic devices that convert kinetic energy into electrical energy through rotation. This device is installed in the water channel or drainage system, the turbine moves according to the water flow. With the main focus in the mosque area, this product is designed to maximize the utilization of community ablution water waste. This discovery is not only efficient in reducing water wastage but also makes a positive contribution to the sustainability of nature by saving water resources that were previously neglected. With a progressive concept, Effortless Ablution Turbine is an innovative step in reversing energy needs and generating awareness of environmental sustainability.

Keywords: ablution; rainwater; dynamo; electricity; environmental sustainability.

1. INTRODUCTION

The high average water consumption in Malaysia reflects less prudent practices in the use of natural resources. Most Malaysians seem not to practically save water, especially when taking ablution, where the water consumption exceeds the actual need (Muhammad, 2018). This situation contributes significantly to the amount of water consumption per capita that exceeds the guidelines set by the UN, especially in residential areas (FOMCA, 2021). In addition, Malaysia, despite having a high rainfall rate, still faces the problem of water wastage. This is because an inefficient drainage system causes a large amount of water to flow through channels without good management. Although nature provides a sufficient supply of water, unwise use practices can damage the continuity of water resources and cause waste that needs to be avoided. In order to overcome this issue, community awareness regarding the importance of wise water use needs to be increased. The drainage system also needs to be renewed and improved to ensure a more efficient and effective use of water (Ahmad et al., 2018). The existence of this Effortless Ablution Turbine can certainly provide benefits to the community and economy. By taking these steps, Malaysia will definitely be able to reduce water wastage and move forward towards sustainable use of natural resources.

Effortless Ablution Turbine was produced with the main focus to fulfil two main objectives which are to provide an environmentally friendly drainage system and generate electricity through the use of ablution water or rain. The first objective of this turbine is to reduce the waste of water that often occurs during ablution activities (Hashim et al., 2016). By exploiting available water resources, this turbine provides a proactive step in reducing pressure on the

water supply and provides a positive impact on the environment.

The second objective is to provide long-term economic benefits. This turbine is not only aimed at students, the general public, and mosques, but is also designed to save electricity bills in the production of electricity. With this focus, turbines can contribute to the sustainability of the country's economy in a continuous period of time. By combining environmental and economic objectives, the Effortless Ablution Turbine is expected to be an innovative model that includes environmental sustainability and economic growth. This objective shows a commitment to provide a holistic and viable solution that can meet the needs of the present without sacrificing the interests of the future.

2. METHODOLOGY

2.1 Innovation Development

Effortless Ablution Turbine was created as an innovative solution to overcome this problem by utilizing the mosque's ablution water waste and turning it into electricity. The turbine is integrated into the main drainage system in the mosque, allowing waste ablution water to flow through it. The uniqueness of this turbine lies in its ability to turn wasted water into a source of energy. When the wastewater drives a turbine connected to a dynamo, the kinetic energy is converted into electrical energy (Riaz et al., 2021). This effect provides a double benefit. First of all, to obtain electricity without using additional natural resources, and secondly, to provide an alternative to reduce the cost of electricity bills found in mosques.

2.2 Product Inventive Features

2.2.1 Dynamo

Dynamo acts as an electricity generator by converting kinetic energy through the rotation of the rotor, the result is electricity. The rotation speed of the rotor affects the amount of electricity produced, where the faster the rotor rotates, the more electricity is produced (Riaz et al., 2021). The electricity is stored in a high-capacity battery for future use. This storage system ensures that electricity can be supplied to the mosque at any time, showing an effective approach in the use of electricity resources for the mosque's needs.

2.2.2 Turbine

The uniqueness lies in the larger turbine blades, which produce a stronger and faster rotation when there is a strong water flow (Riaz et al., 2021). This system harnesses the power of water to generate kinetic power in the rotor, creating an effective power source through an efficient and innovative mechanism.

2.2.3 LED Light

The LED light plays an important role as a status indicator in the Effortless Ablution Turbine system. In situations where the rotor on the dynamo is spinning, a green LED light will light up, providing a benchmark that electricity has been generated. The function of LED lights as a visual indicator provides clarity and immediate understanding of turbine activity. By lighting

up and emitting a green light, it provides direct information about system performance and electricity production, facilitating the monitoring and management of the Effortless Ablution Turbine's operational effectiveness.

3. RESULTS AND DISCUSSION

3.1 Analysis of Needs and Market Potential

Effortless Ablution Turbine has great market potential, especially among mosques in Malaysia. With its ability to optimize the use of ablution water waste and reduce the cost of electricity bills, this tool is also effective for mosques to preserve the environment. This product is not only limited to the mosque sector, but can be sold to residential and industrial areas, large or small. The ability of this tool to reduce the cost of electricity bills gives great power to various levels of society. Finally, the reduction of greenhouse gases makes this product a positive choice to support environmental protection efforts.

3.2 Product Prototype

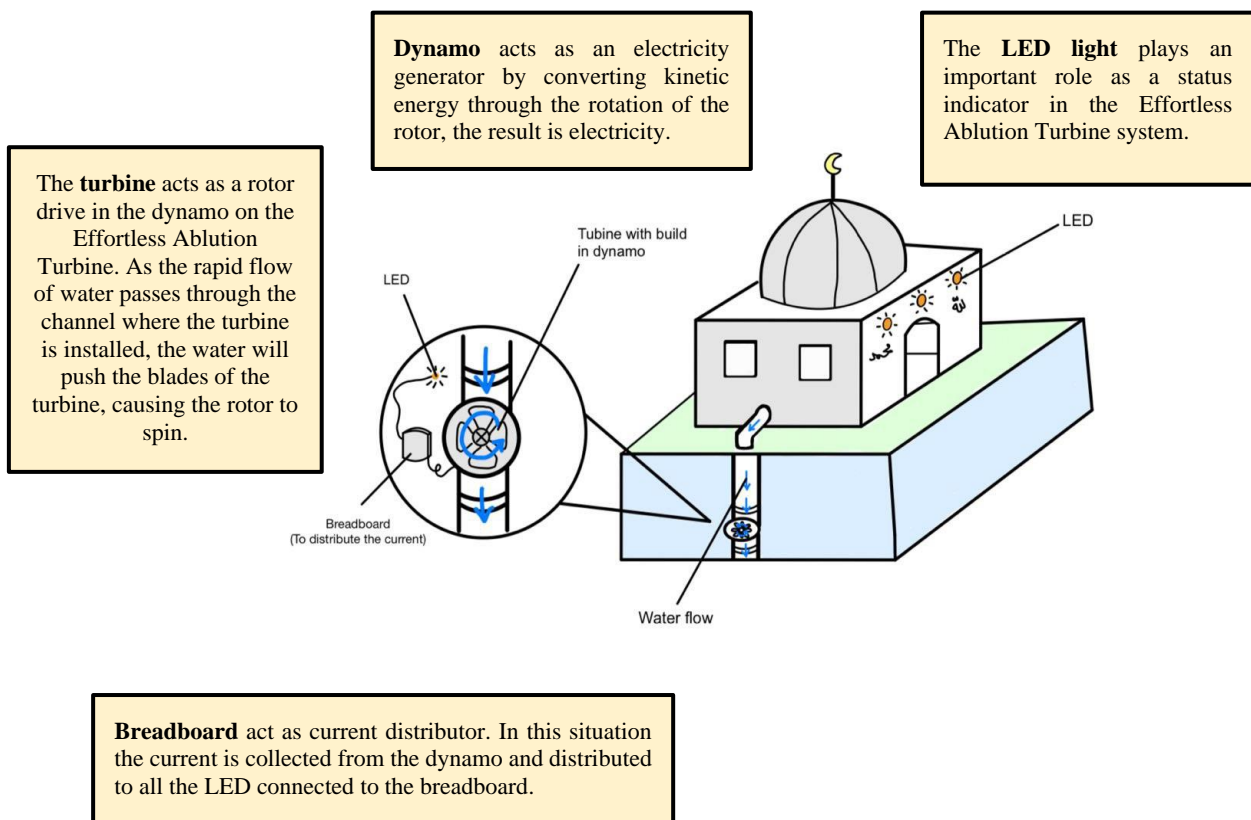


Figure 1. Sketch of prototype



Figure 2. Prototype result

4. CONCLUSION

The Effortless Ablution Turbine is capable of providing many benefits to the environment, the national economy and even daily life. By using this built turbine, this product can be used to generate hydroelectric power by using excess ablution water. Not only that, this turbine is built based on the scientific concept in Islam that forbids us to waste. Waste of water can be avoided using this turbine device by using excess water to generate hydroelectricity. Hydroelectricity that is generated for mosques can reduce electricity bills as well as increase the country's economy. Therefore, the construction of this turbine can be seen as an effort to create the pure values taught in Islam. As a conclusion, the construction of the Effortless Ablution Turbine can teach us that the development of technology based on scientific concepts in Islam can provide many benefits to the environment and society. Therefore, this product is not only able to generate electricity but can also bring us closer to Islamic values in the development of technology and ideas that can benefit the country.

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