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AiCee

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ABSTRACT

AiCee is a brand-new fancy product for individuals who desires to enjoy their favourite drink cold for a long time. Since, global warming has caused an increase in global temperatures, individuals would need a way to store their produces and beverages more effectively. Thus, we believe that AiCee itself can solve the current issue. This is because AiCee is equipped with the function of maintaining the temperature of its contents for a long period of time by applying the concept of specific heat capacity and thermodynamics. We instilled the concept of thermodynamics by pumping out heat from inside of the AiCee. This function enables the inside of the AiCee to stay cold. The AiCee is suitable for people who are constantly under hot weathers such as athletes, outdoor people and fishermen. In a nutshell, the AiCee is a revolutionary product that is beneficial for the quality of life of individuals.

Keywords: thermodynamics; specific heat capacity; hot; cold.

1. INTRODUCTION

Due to the extremely hot weather that has been hitting us lately, everyone in this world is affected by this situation. This extremely hot weather is mainly caused by global warming. Global warming is not interchangeable with climate change, but these terms are caused by human activities and the greenhouse gases that are released to our surroundings.

The main issue is global warming has caused weather itself has become increasingly warmer thus, the need for people to be able to transport cold produces is needed. Although there are already existing ice boxes, these ice boxes would require ice in order to create the cool environment and the ice itself would need to be replaced periodically. Depending on how the ice boxes are placed, stored, and how often it is opened can cause the efficiency of the ice boxes to lower (Charter Boat Icebox and Refrigerator Basics and Best Practices | Modern Sailing, n.d.). Thus, if not stored used properly, the content of the icebox itself would heat up thus, resulting in the wastage of resources.

Therefore, as a team, we came up with an idea to modify the existing icebox to make it more efficient and effective to all communities and the Earth. We decided to upgrade the iceboxes that are commonly used among the fishermen nowadays since everyone must deal with an extremely hot weather that could cause the fish and seafood that have been caught becoming not fresh. Not just fishermen, but people who are active in sports also really needs our invention, AiCee. This is due to the heavy weight of the existing icebox that is inefficient to carry it to the middle of the field. The existing icebox is only capable of maintaining heat for a short period

of time and not able to create a cold environment to make the ice last longer. Therefore, our objective creating this AiCee are to retain its heat and always keep it cold and make sure that our icebox could be used by a huge range of demographics.

2. METHODOLOGY

The main underlying issue that we wish to solve is the fact that most people would have to deal with the brutal hot weather. Thus, a way to solve this is by introducing a product that can carry cold produce and ensure that the produces stay cold for a long period of time. The variables that are considered in producing this product is how exactly it would benefit to the users and the environment. We've also taken consideration on which component itself should be introduced into our product, thus, ensuring that we produce an efficient product.

AiCee is a cutting-edge product that allows people to store cold food and beverages for extended periods. It applies several physics theories to achieve this. The first part of AiCee is a plastic ice box. Plastic containers conduct less heat than materials like metal or glass, making them more comfortable to handle when they contain hot or cold substances (James R. Watson, 2014). With AiCee, we can be sure that all the food and beverages stored in this product will remain cool and fresh for longer periods.

Next, AiCee has been innovated to become a portable air conditioner using three mini exhaust fans. By applying the second law of Thermodynamics, we use the concept heat pumps where heat is expelled out to the surrounding from the icebox (Urone & Henrichs, 2020). The product has a switch that makes it easy to open or close the electrical circuit, which can turn the mini exhaust fans on or off. These fans help lower the temperature inside the ice box by expelling hot air and bringing in cooler air from the surroundings. The fans use lithium batteries for the source of energy.

Other than that, we have installed a thermal sensor inside our ice box that detects the temperature inside. If the temperature goes beyond 10 degrees Celsius it will send an electrical signal (Kester et al., 2005) and the exhaust fan automatically turns on to dissipate the heat and maintain the temperature inside the ice box. This helps to keep the items inside the ice box cool and prevents them from getting damaged.

Besides that, we put dynamo to our product as one of the battery chargers. To charge the battery, a dynamo is placed on the tire and connected to it using wires. As the dynamo spins, it creates an electric magnetic induction thus generating energy (Chuan et al., 2020). This ensures that the battery always has enough energy to be used whenever and wherever needed. Finally, we also added a handle to our ice box to make it more user-friendly. This feature allows users to easily move the ice box to any location they desire by simply pulling the handle to transport the ice box.

Table 1. List of Material and Purpose

Material	**Purpose**
Plastic Ice Box	Contain contents of Ice box and ensure the temperature remains in the box
Exhaust Fans	Act as air conditioner by expelling hot air from the box
Thermal Sensor	Detect Temperature inside of the box
Lithium Battery	Source of energy
Dynamo	Generates energy when spun
Tire and Handle	Helps transport the ice box easily
Switch	Turn the on or off the exhaust fan

3. RESULTS AND DISCUSSION

The market potential of the AiCee covers a huge part of the market. One group of people that would benefit from the AiCee are people who are active in sports. This is due to the AiCee's capability of keeping beverages cool for a long period of time and it has a design that is easy to carry. The average person can also use this product in cases where they want to go camping, go out for a picnic or go out with friends in general. Not only the AiCee is suitable to store beverages, but it can also be used to store cold produce such as fish and meat. Due to this, fishermen can use the AiCee to store their fishes in a huge amount and not having to worry about carrying heavy boxes as the freshness of fish lasts 2 hours out of water (Nutrition, 2024). As a result, there is no doubt that the AiCee will receive high demands from a wide spectrum of people.

As the problem related to the heat conservation of the icebox, the AiCee is made out of plastic which is good at reducing heat conduction. This ensures that no heat from the outside enters the AiCee and the cool temperature inside maintains. It is worth highlighting that plastic is a light material thus, it can be easily carried around. In addition, the AiCee has a built-in mini fan that functions as a way to pump out hot air from the box itself. This enables us to create a cold environment inside of the icebox ensuring whatever is being put inside of the AiCee is able to stay cold for a longer period of time. The fans use lithium-ion batteries since they are able to last long. Finally, the AiCee has a built-in thermos sensor that can detect the temperature inside the box and automatically turn on the fan. Whenever the inside of the AiCee reaches the optimal temperature, it will automatically turn off the fan saving energy for another time.

3.1 Figures and Images

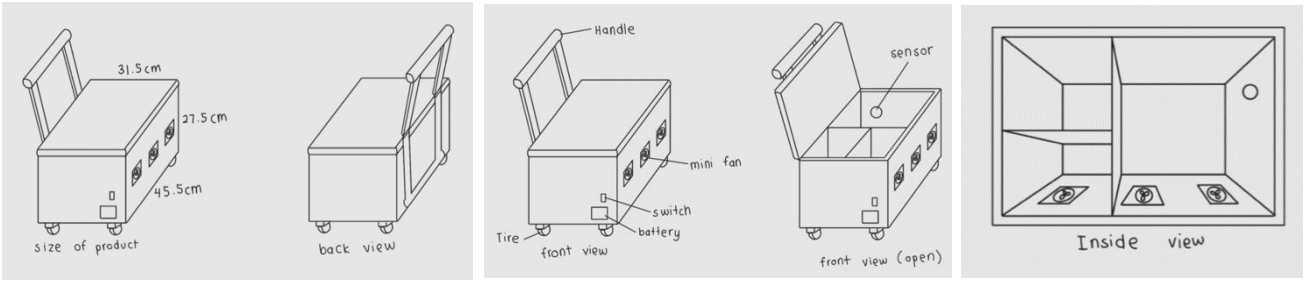

Figure 1. Image of AiCee

4. CONCLUSION

Maintaining consistently cold temperatures in an icebox or freezer for an extended period is crucial for preserving the quality and safety of stored perishable items. This works due to heat movement in the ice box by flowing air from inside the ice box out. With this, the temperature in the ice box can remain at a low temperature. The exhaust fan is used to suck air in the ice box. The battery is used to supply electricity to turn on the fan. Dynamos are also used to distribute power as a battery charger. With this the fan can always be used even if there is no source of electricity from the electricity supply. Not only the product itself is suitable for fisherman and athletes, but it is also suitable for regular individuals as well. As for the future, we plan to create a more environmentally safe innovation thus giving it better commercial potential.

ACKNOWLEDGEMENT

We were successful in developing a completely original, cutting-edge product. In this day and age, when individuals must deal with hot, humid weather virtually every day, we think that our product will be useful. In addition, we want to express our gratitude to Dr. Siti Aisyah Zawawi. We appreciate the guidance and support provided by our instructor in helping us complete this Creations de UiTM innovation project. Furthermore, without the work of our group members Ahmad Daniell Bukhari, Aida Rafieqah Mohd Rizal, Ameena Safiyyah Zaihan, Aliyah Sofiya Abdul Muiz, and Muhammad Muizzuddin Mahadhir, this task could not be finished.

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